

LITERATURE SEARCH AND RECORDS REVIEW
OF THE UPPER MISSISSIPPI BASIN: ST.
ANTHONY FALLS TO LOCK AND DAM 10

Prepared By: Great Lakes Archaeological Research Center, Inc.
P.O. Box 1304
Waukesha, WI 53187

David F. Overstreet, Ph.D.
Principal Investigator

Robert P. Fay
Research Associate

Carol I. Mason, Ph.D.
Research Associate

Robert F. Boszhardt
Research Associate

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St. Paul District, Corps of Engineers
1135 U.S. Post Office & Custom House
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technical and popular report.

Site-specific information was compiled for both historic and prehistoric sites from state agencies in Iowa, Minnesota and Wisconsin, and from various local and regional institutions. More than 1,000 historically or architecturally significant sites and districts and, more than 1,400 prehistoric archaeological components were recorded and plotted on base maps. From the site configurations and from other data collected during the course of the records and literature review, a narrative framework for the interpretation of historic and prehistoric sites was developed. Recommendations to enhance the management of the archaeological and historical data base were provided.

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A B S T R A C T

In March, 1982, Great Lakes Archaeological Research Center, Inc. entered into a contractual agreement with the Department of The Army, St. Paul District, Corps of Engineers to conduct a Cultural Resources Literature Search and Records Review of the Upper Mississippi River Basin. The project area was defined as a reach along the Mississippi River from river mile 857.6 above St. Anthony Falls to Lock and Dam no. 10 at Guttenberg, Iowa.

Site specific information was compiled for both historic and prehistoric sites from state agencies in Iowa, Minnesota, and Wisconsin, and, from various local and regional institutions. More than 1,000 historically or architecturally significant sites and districts were recorded and plotted on base maps. More than 1,400 prehistoric archaeological components were recorded and plotted on base maps. From the site configurations and from other data collected during the course of the records and literature review, a narrative framework for the interpretation of historic and prehistoric sites was developed. As well, recommendations to enhance the management of the archaeological and historical data base were provided as part of the final report.

Authorization for these investigations (Contract No. DACW37-82-C-0011) was derived from the identified needs of the St. Paul District, U.S. Army Corps of Engineers Master Plan for the 9-foot Navigation Project on the Upper Mississippi River. The report of these investigations serves as partial fulfillment of the St. Paul District's responsibilities for management and protection of cultural resources mandated by Federal legislation.

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ADMINISTRATIVE SUMMARY

This literature search and records review of the Upper Mississippi River Basin (River Mile 857.6, above St. Anthony Falls to Lock and Dam 10) was authorized by the St. Paul District Corps of Engineers as part of its master plan for the 9-foot Navigation Project on the Upper Mississippi River. The objectives of the investigation were to: (1) conduct a comprehensive review of existing records and review of published and unpublished literature; (2) provide an evaluation of recorded cultural resources located within the study area; and (3) prepare a detailed technical and popular report.

Once base data were compiled, additional tasks included the establishment of a narrative framework for prehistory, ethnohistory, and the historic period. Study methods, a discussion of the data matrix consisting of 10 Volumes of site-specific information, and a data summary were also provided. Finally, recommendations were developed from the literature and records review to assist the St. Paul District Corps of Engineers in its continuing efforts to manage the archaeological and historical data base. These recommendations include steps to maintain and enhance current site inventories, means of fostering better communication with archaeologists and historians in Minnesota, Wisconsin, and Iowa, implementation of thematic and/or regional studies within the project area, implementation of geomorphological investigations, evaluation of locks and dams and endangered historic and prehistoric sites, and, consideration of methods for enhancing public understanding and appreciation of cultural resources and St. Paul District Corps of Engineers efforts and responsibilities for protection, preservation, and enhancement of archaeological and historical properties.

More than 1,000 sites and districts were identified and cited as potentially significant from architectural or historical perspectives. More than 1,400 archaeological components were noted from existing records and literature from Minnesota, Iowa, or Wisconsin, and from the regional literature and other sources.

David F. Overstreet served as principal investigator and had primary responsibilities for contract administration, prehistoric sites in Wisconsin, and the summary of past and present environments. Robert P. Fay identified historic sites in Wisconsin, Iowa, and Minnesota and developed the recent historic narrative. Robert Bozshardt compiled data for prehistoric sites from Minnesota and Iowa and assisted in the preparation of the prehistoric narrative. Finally, Carol I. Mason researched and wrote the narrative sections on regional ethnohistory and the fur trade.

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INTRODUCTION

In March of 1982 Great Lakes Archaeological Research Center entered into a contractual agreement with the Department of The Army, St. Paul District, Corps of Engineers to conduct a Cultural Resources Literature Search and Records Review of the Upper Mississippi River Basin. Three primary tasks govern these investigations and are stated in the Scope of Work (see Appendix A) as: (1) provide a comprehensive review of extant records and review of published and unpublished sources from existing literature; (2) evaluate recorded cultural resources located within the study area; and (3) prepare a detailed technical report and a popular report reflecting the endeavors of (1) and (2) above. Finally, the study was undertaken as part of the St. Paul District's Master Plan for the 9-foot Navigation Project on the Upper Mississippi River.

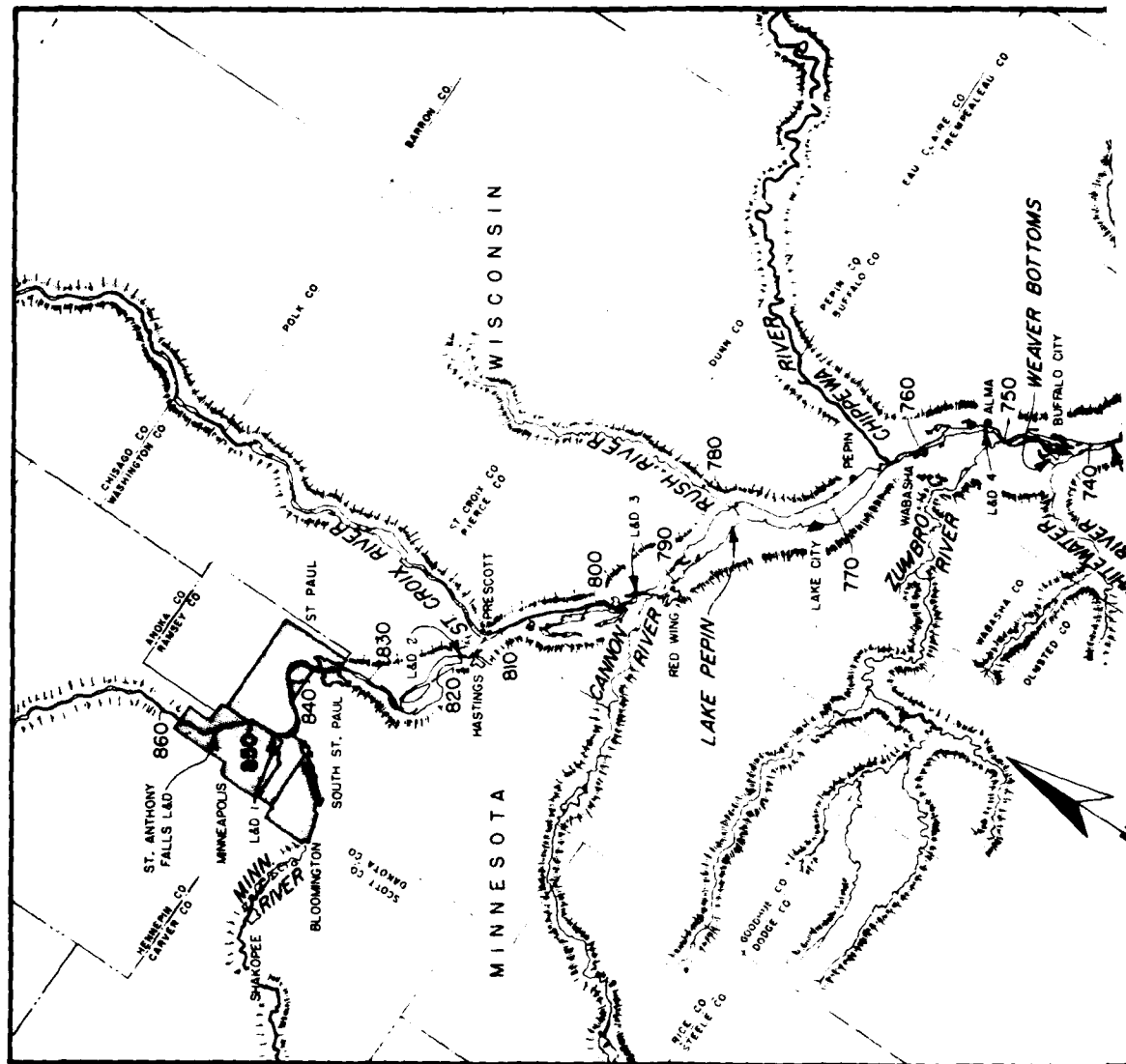
PROJECT AREA:

This literature search and records review was concerned only with the Mississippi River main stem. However, early in the data compilation it was decided that prehistoric and historic archaeological sites and historic structures and locales immediately adjacent to the main stem should be included as the information previously collected from many of these sites has direct bearing on the nature and distribution of cultural resources within the project-specific boundaries.

In the most general terms, the project area can be defined as the Upper Mississippi River Basin from RM (River Mile) 857.6, above St. Anthony Falls in Minnesota to Guttenberg, Iowa at Lock and Dam No. 10, coincident with RM 615.1. The total linear reach comprises some 242.5 river miles. More specific project boundaries were delineated on base maps by St. Paul District Corps of Engineer personnel and include an area approximately one-quarter mile landward of the bluff line on either side of the Mississippi River. Figure 1 provides for a portrayal of the project area and Table 1 references the United States Geological Survey quadrangles that cover the area depicted in Figure 1.

Table 1: U.S.G.S. Quads

Minneapolis, South	Lake Elmo
Minneapolis, North	Inver Grove Heights
St. Paul, East	St. Paul Park
St. Paul, West	Prescott
Hastings	Wabasha
Red Wing	Alma
Maiden Rock	Church
Lake City	Ferryville
Cochrane	Prairie du Chien



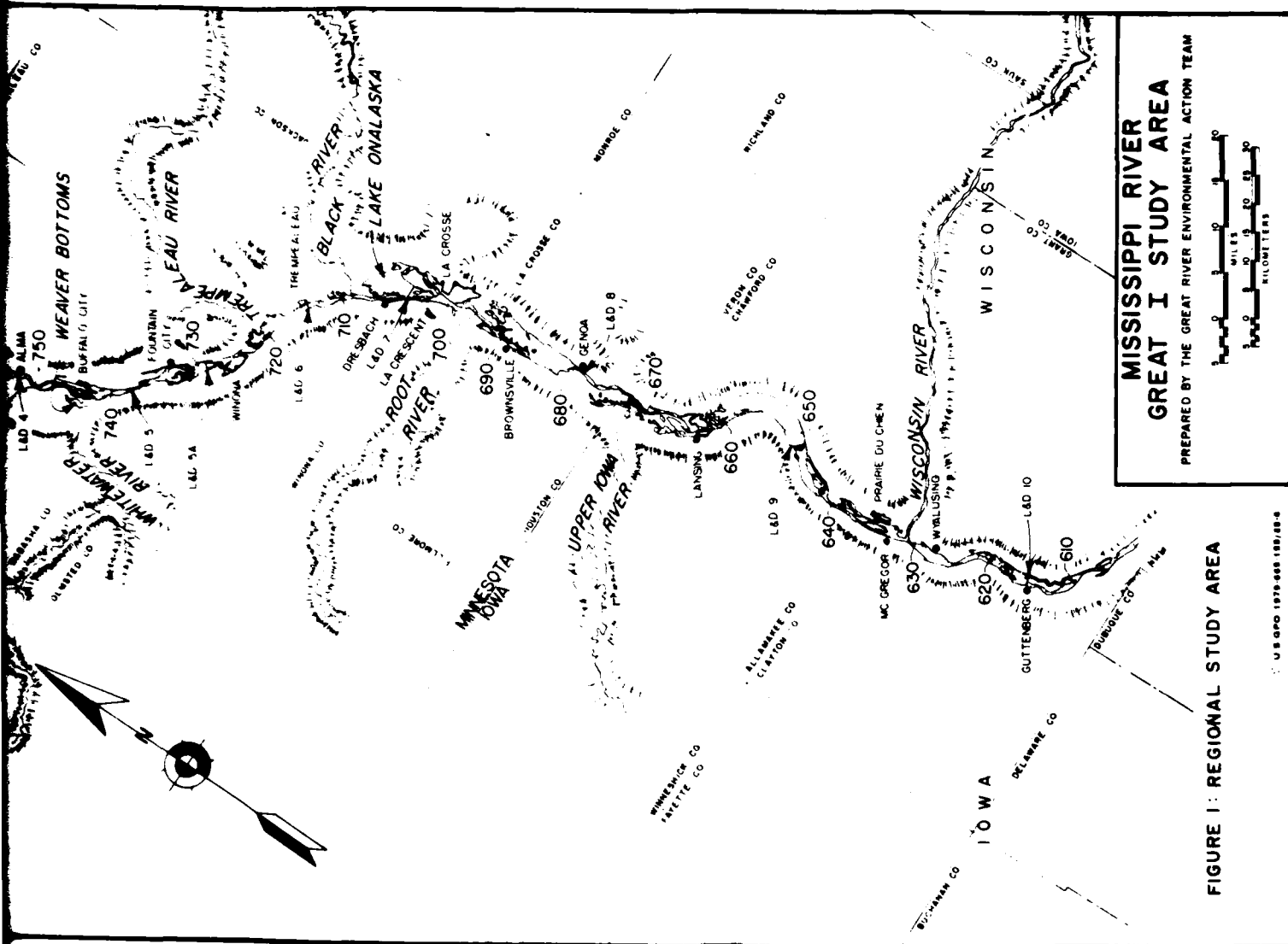


FIGURE 1: REGIONAL STUDY AREA

PREPARED BY THE GREAT RIVER ENVIRONMENTAL ACTION TEAM

U S GPO 1979-649-199/10-6

Table 1 (cont'd)

Galesville	Clayton
Winona	Bagley
La Crescent	Garnavillo
La Crosse	Brownsville
Stoddard	New Albin
Guttenberg	

The project area was subdivided by the most conspicuous features along the reach of the Mississippi River-the locks and dams-that have created a series of artificial pools. These pools, 13 in number, are created by lock and dam 10 at Guttenberg, Iowa, lock and dam 9 at approximately RM 648, lock and dam 8 below Genoa, Wisconsin, lock and dam 7 above La Crosse, Wisconsin, lock and dam 6 at Trempealeau, lock and dam 5a, located at approximately RM 728 above Winona, Minnesota, lock and dam 5 at approximately RM 736, lock and dam 4 at Alma, Wisconsin, lock and dam 3 above Red Wing, Minnesota, lock and dam 2 above Hastings, Minnesota, lock and dam 1 in Minneapolis-St. Paul, and the St. Anthony Falls lock 3 and dam 5 (refer to Figure 1). The pools created by St. Anthony Falls lock and dam and lock and dam 1 were combined, as were pools 5 and 5a, arbitrarily defining 10 major locational units within the total study area.

STUDY OBJECTIVES:

Long term and basic objectives of the study are stated in the accompanying Scope of Work:

The objectives of the literature search and records review are to identify all the known cultural resources which may be or have been in the past affected by the operation and maintenance of Corps projects within the Upper Mississippi River Basin, identify gaps existing in our knowledge of the cultural resources of the area, identify biases which may be inherent in the data base, and recommend research goals for future investigations.

It is certainly presumptuous to assume that we have fully met this objective during the short course of 5 months. However, preliminary discussions with St. Paul District Corps of Engineers personnel served to clarify the intent of the study. We were well aware that it was unlikely that we would identify all known cultural resources. Further, we were cognizant of the

fact that we do not have good control or understanding of the effects of the locks and dams or other Corps projects on the landforms in the Upper Mississippi Valley. Certainly, in a study area of this magnitude with a priori knowledge of the state of the prehistoric and historic data base, we had mutual understanding that this goal was one that we would work toward accomplishing to secure necessary planning data. The compilation of data is comprehensive, however, it would be unwise, as well as misleading, to state that all known resources have been identified.

This technical report is designed to serve several more specific functions. First, and foremost, it is a planning document that represents one small segment of the St. Paul District's Master Plan for the 9-foot Navigation Project on the Upper Mississippi River. The document is conceptualized as a tool to preserve and protect the nation's cultural heritage within the study area. This responsibility is one of many vested interests of the St. Paul District Corps of Engineers and is mandated by an extensive legislative and regulatory framework. Legislative and regulatory obligations of the St. Paul District are identified in Table 2.

Table 2: Legislative/Regulatory Mandates

Archaeological Resources Protection Act of 1979
(P.L. 96-95)

National Environmental Policy Act of 1969
(P.L. 91-190)

National Historic Preservation Act of 1966
(P.L. 89-665 as amended)

Protection and Enhancement of the Cultural
Environment (Executive Order 11593)

The Advisory Council on Historic Preservation's
Procedures for the Protection on Historic and
Cultural Properties (36 CFR part 800)

Preservation of Historic and Archaeological Data
1974 (P.L. 93-291)

Corps of Engineers Identification and Evaluation
of Cultural Resources (ER 1105-2-50 and
EP 1105-2-55)

In effect, this compilation of cultural resources data represents partial fulfillment of the obligations of the St. Paul District Corps of Engineers as mandated and required by the legislative and regulatory body detailed in Table 2.

This report is also designed as a scholarly document. It is anticipated that the baseline study will become a valuable tool to other researchers concerned with cultural resources, such as historians, architectural historians, archaeologists, cultural geographers, and others. Hopefully, the documents comprising this study will serve as useful scientific reference for future professional studies.

Finally, the popular report serves to communicate the results of the study in laymen's terms. Its goal is to educate the public about the rich cultural heritage of the Upper Mississippi Valley as well as to demonstrate the concern and the concerted efforts of land managers to preserve, protect, and enhance the cultural resources of the study region for the public good.

IMPLEMENTATION OF INVESTIGATIONS:

Data Gathering and Organization:

Because of the relatively tight time-frame within which this investigation was completed, many tasks that might have otherwise been conducted in sequential order were conducted simultaneously. As well, several individuals were assigned specific tasks relating to their areas of special expertise.

Initially, reports of investigations regarding cultural resources that were carried out by personnel of the St. Paul District Corps of Engineers, or by others under contract for the St. Paul District were reviewed. This allowed for an appraisal of the level of inventory on Corps of Engineer owned or managed lands. The second phase of data gathering was field based. Repositories throughout the region were visited and various site files were consulted. In addition, published and unpublished documents housed at the regional repositories were reviewed. Site file, archive, and literature and informant data were plotted on U.S. Fish and Wildlife Service Upper Mississippi River (Great I) base maps. These maps, compiled in 1979 from U.S.G.S. topographic sheets and air photos, have a scale of 1:24,000. At the same time, bibliographic data were recorded in a card file system. Both the base maps and the bibliographic references can be considered working documents. The base maps have been forwarded to the St. Paul District Corps of Engineers and the bibliography appears as Volume XII of this study. Finally, specific literature references, maps, brochures, and other information sets have been bound in supplemental files as accompanying data. The accompanying data include information (various references) for Hennepin, Anoka, Ramsey, Washington, Dakota, Goodhue, Wabasha, Winona and Houston counties in Minnesota; Pierce, Pepin, Buffalo, Trempealeau, La Crosse, Vernon, Crawford, and Grant counties in Wisconsin;

Allamakee and Clayton counties in Iowa. As well, supplemental data files were established for general references for Minnesota, Iowa, and Wisconsin, and a single file for the references germane to the entire project area was established. These data range from specific site forms to photographic reproductions of microfilm files.

Once baseline data had been compiled and organized, narratives were developed to summarize the physical and cultural setting of the project area. Following the writing of the narrative, the data base was evaluated in regard to identification of biases and gaps, contemporary and potential future research questions were formulated, and recommendations were presented in a prioritized framework to overcome the deficiencies of the present study.

Data Presentation:

The information contained in this report of investigations is voluminous to the degree that a discussion of the manner in which it is presented is warranted. By far, the site-specific information represents the majority of effort expended during the course of the study. However, it seemed best to establish a series of contexts within which these data could be interpreted and analyzed. To this end, general summaries were developed for environmental, prehistoric, ethnographic, ethnohistoric, and historic contexts of the Upper Mississippi Valley. They should not be evaluated as comprehensive accounts. Rather, the narrative summaries of the environment, prehistory, and history serve to familiarize the reader with the general trends and patterns noted within the region. It is within these contexts that past and present occupants of the study area pursued life-ways tied to the main stem of the Mississippi River, its tributaries, and the adjacent terraces and dissected uplands. The summaries attempt to provide a scenario that portrays the fundamental role of the project area's natural features in stimulating social, economic, political, and cultural modifications as evidenced in the archaeological and historical literature.

Volume I of this study is devoted for the most part to the narrative summaries and the conclusions and recommendations drawn from the investigation. Volumes II through XI summarize and provide locations for specific sites. Volume XII is a compendium of bibliographic references collected throughout the duration of the investigations and should be particularly useful to scholars conducting research in the region in future years. In conclusion, the twenty-three data files provide detailed information that may be of use both in the planning process as well as for future historical and archaeological investigations.

In order to prolong the life of this report as a working document, graphic and tabular presentations for Pools 1-10 have been designed so that additional information may be added to the report as it becomes available through both pure and applied research. The base maps were produced with mylar overlays and can thus be periodically updated. Tabula-

tions of historic and prehistoric sites include blank summary sheets so that the inventory can be periodically updated. As well, information not available at this time can be integrated should such information be collected at some time in the future.

Of additional interest, perhaps, are twenty-three supplemental volumes that have been transmitted to the St. Paul District, U. S. Army Corps of Engineers as part of this work. These volumes, organized by county and state, are composed of maps, site records, National Register forms, and other detailed information that may be of use to those conducting cultural resources investigations or related regional research. These twenty-three supplements, in part, represent primary documents employed in developing this report.

ENVIRONMENTAL CONTEXTS

INTRODUCTION:

Human history in the Upper Mississippi River Valley encompasses perhaps the last 10-12,000 years. During this substantial span of time scientists working in a variety of academic disciplines have demonstrated that the natural habitat has experienced numerous changes, some radical, others subtle yet significant. Such dramatic events as glacial advance and recession, for example, have wrought major modifications on the landscape. Less dramatic, however no less significant, have been the inexorable forces of hydrology which continually work and rework the sediments on the valley floor. Floods which have occurred with regularity and varying severity modify channels, lakes, and sloughs. In turn, plant and animal species have responded to these modifications. Distributions of plants and animals, ever sensitive to the ebb and flow of climatic factors are sometimes abundant, other times scarce. It is axiomatic that changes in topography, drainage, vegetation, and fauna, and fluctuations in climate, major and minor, presented continuous challenges to be faced and overcome by the prehistoric and historic occupants of the main stem of the Mississippi River and its adjacent lands. These shifting environmental contexts presented new and difficult problems to populations by and large dependent on the flora and fauna of the region. The varying degrees of success these past populations had in responding to changing environmental contexts can be found in the archaeological record. More recent history as well serves to document shifting adaptive strategies and exploitative patterns.

It is unfortunate that our understanding of past climatic, floral and faunal changes is not as refined as we might like. However, it is fortunate indeed that historic and prehistoric sites, more importantly the data contained therein, may be used by scientists to refine that necessary understanding. The interchange of ideas of historians, archaeologists, geologists and others will ultimately lead to a clarification of not only how the landscape was modified, but how past human populations adjusted to and overcame the challenges presented by such shifts. The subsequent commentary is both an attempt to portray the status of our current knowledge of changing environmental contexts within the Pool 1-10 region, and an attempt to identify some of the more problematical questions facing contemporary scholars.

BEDROCK GEOLOGY:

The contemporary configuration of the Upper Mississippi Valley is, in large part, a function of variations in underlying bedrock. More resistant features stand out as dramatic bluffs, hundreds of feet above the valley floor. Less resistant lithological formations have been both glacially and hydrologically eroded and are important constituents of lowland soils as well as parent material for the many terraces which form the interstices between bluff-top and floodplain. Finally, the width of the valley floor is positively correlated with bedrock phenomena. The gorge itself has been created by alternating processes of erosion and deposition. At segments along the river, resistant bedrock constricts the river's flow and limits fluctuations in channel location. Where less durable bedrock is encountered the valley widens and we witness the occurrence of sloughs, ox-bows, and back-water lakes.

This variation based on bedrock geology was extolled by Schoolcraft in 1821 from a vantage point at the confluence of the Mississippi and St. Croix Rivers:

There is an island in the Mississippi opposite its junction. At this place, the river bluffs assume an increased height, and more imposing aspect, and in the course of the succeeding fifty miles, we are presented with some of the most majestic and pleasing scenery which adorns the banks of the upper Mississippi. In many places the calcareous bluffs terminate in pyramids of naked rocks, which resemble the crumbling ruins of antique towers, and aspire to such a giddy height above the level of the water, that the scattered oaks which cling around their rugged summits seem dwindled to the most diminutive size; at others, the river is contracted between two perpendicular walls of opposing rock, which appear to have been sundered to allow it an undisturbed passage to the ocean, and not unfrequently, these walls are half buried in their own ruins, and present a striking example of the wasting effects of time upon the calcareous strata of our planet. Sometimes there is a rock bluff on one bank, and an extensive plain of alluvion on the other, contrasting with the finest effect, the barrenness of the mineral, with the luxuriant herbage, and the rural beauty, of the vegetable kingdom. Again, the hills recede from either shore, and are veiled in the azure tint of the distant landscape, while the river assumes an amazing width, and is beautified with innumerable islands, and we find ourselves at once bewildered between the infinity of its channels, and the attractive imagery of its banks (1821: 334-35).

Along the course of the Mississippi River from St. Anthony Falls to Guttenberg, Iowa, various bedrock formations intermittently outcrop. These formations range from older Cambrian origin, e.g., Eau Claire sandstone, Dresbach sandstone, Franconia sandstone, the Trempealeau formation (sandstone, siltstone, and dolomite), to more recent Ordovician rocks. Among the many dolomitic formations in the Ordovician rocks are those such as the Prairie du Chien formation and the Galena limestone that contain cherty materials which serve as a source of raw materials for stone tool manufacture in prehistoric populations. Identification of specific chert sources in the bedrock formations along the Mississippi River in the study area remains an important question to be resolved by cooperative efforts of geologists and prehistorians. Several useful guides can be consulted for more detailed discussions of bedrock geology in the study area and readers are referred to: Sims and Morey (1972), Martin (1965), Hershey (1969), Bergstrom (1968), Bray (1977), Whitlow and Brown (1960), and Heyl et al (1959).

Wisconsin and earlier glacial drift covers most of the project area where bedrock does not outcrop. The depth of the glacial drift varies; however, most was deposited during the terminal segments of the Wisconsinan glaciation about 10-20,000 years before present. Because of this notable feature, it is appropriate to briefly summarize the glacial history of the project area.

RECENT GLACIATION:

There is general agreement among contemporary geologists that the gorge of the Mississippi River Valley (some prefer the term trench, owing to the magnitude of that feature) was formed millions of years before the Pleistocene by erosional forces prior to that epoch (U.S. Army Corps of Engineers, 1974: 36-38). Thus, the notion held by earlier scholars that recent glacial activity was responsible for the trench formation has been largely rejected.

Recent glacial episodes associated with the Wisconsin glaciation have been responsible for the deposition of drift varying from depths of a few feet to hundreds. For example, in the Minneapolis-St. Paul area, approximately 100 feet of glacial outwash has been deposited atop the eroded Galena Limestone (U.S. Army Corps of Engineers 1974: 40). At Lake City, Minnesota some 200 feet of drift has been recorded while at Winona the depth is reduced to approximately 150 feet (Martin 1932: 169). At Pike's Peak State Park in Clayton County, Iowa the depth is much less, as one would expect owing to the topography (see Hotopp 1977: 470). And, at the Star Brewing Company in Dubuque, the bedrock floor of the valley lies more than

300 feet below the present floodplain of the Mississippi River (Whitlow and Brown 1960).

Each glacial advance and retreat modified or obliterated noticeable effects of earlier stages. Earlier glacial episodes and associated landform and drainage modifications have been succinctly summarized by the U.S. Army Corps of Engineers for the project area. The following summary taken from the final environmental impact statement prepared by the St. Paul District in 1974, serves well to encapsulate the glacial history of the project region.

Beginning about 1.0 million years ago, the upper Midwest entered what is commonly referred to as the Pleistocene Ice Age. The average world climatic temperature dropped at this time and several large continental glaciers developed in what is now Canada. At their maximum, these glaciers covered all of Canada east of the Rockies and extended as far south as the Ohio River. Glaciers advanced and subsequently melted four times during the Pleistocene. Each glacial episode was separated by an interglacial period having a climate at least as warm as it is today. Each glacial and interglacial period is named after an area where the geologic history of that period is especially well displayed:

Nebraskan Glaciation (which began about
1 million years ago)
Aftonian Interglacial
Kansan Glaciation
Yarmouthian Interglacial
Illinoian Glaciation
Sangamon Interglacial
Wisconsin Glaciation (which ended about 10,000
years ago.)

Each glaciation was recorded by deposits of glacial drift that in many cases are buried by younger drift deposited by later glaciers. Scattered pockets of old glacial drift occur as far east as Winona County in Minnesota. In addition, many erratic boulders can be found that were obviously transported by glaciers. Most geologists believe that the Driftless Area of southwestern Wisconsin and Southeastern Minnesota was not glaciated, but was affected by glacial meltwaters.

Pre-Wisconsin glaciers probably disrupted drainage in the Upper Mississippi Valley as much or more than the Wisconsin glaciers. Geological evidence of such disruptions was either buried or destroyed by later glaciers or postglacial erosion.

The Wisconsin glaciation is the most recent and most important glaciation in the Upper Mississippi River basin. Generally speaking, the advances and retreats of various lobes and sublobes of glacial ice during the phases of the Wisconsin stage were largely responsible for the formation of the present floodplains of the Mississippi River and its tributaries.

Wisconsin glacial drift covers nearly all of Minnesota, Wisconsin, and Northern Iowa, except for the Driftless Area. Most of this drift was deposited during the latter part of the Wisconsin Stage between 10 and 20 thousand years ago. Most of the drift is poorly drained as evidenced by the more than 10 thousand lakes in Minnesota that are of glacial origin. Pre-Wisconsin river valleys were, in many cases, not reoccupied following deglaciation. For instance, the Mississippi River above its junction with the Minnesota River does not follow the pre-glacial course, but rather one developed at the close of the Pleistocene.

During much of this period, drainage of glacial meltwaters to the north and east was blocked, resulting in tremendous flows being carried out of the region via the Mississippi River drainage system. These flows generally carried a very small sediment load compared to the size of the discharge, giving water a great capability to erode. The valleys of the Minnesota and Mississippi Rivers, for example, were enlarged by Glacial River Warren far beyond the apparent needs of their present-day discharges. As the glaciers retreated, drainage to the north and east was reestablished. As the volume and velocity of the meltwater declined, river valleys were partially refilled by glacial outwash sediments consisting largely of sand and sandy gravel.

Subsequent stream action incised and greatly modified these outwash deposits, leaving terraces and terrace remnants along the valley sides of the Mississippi River and its tributaries. Along the Chippewa River for instance, terraces up to 100 feet high are located adjacent to the present river floodplain, serving as a nearly inexhaustible source of coarse sediments.

The Mississippi River valley was partially refilled with alluvium as the river adjusted its gradient to carry the sediments supplied by its tributaries. The gradient of the Chippewa River between its mouth and Eau Claire, Wisconsin, is about ten times greater than the present gradient of the Mississippi River between St. Paul, Minnesota and La Crosse, Wisconsin. Thus, the Chippewa has more stream energy and can carry a coarser bedload than the Mississippi. The post-glacial Mississippi River discharge, combined with the flow from Glacial River Warren had a capacity great enough to transport all the Chippewa River sediments. As River Warren ebbed, the sediment-carrying capability of the Mississippi River also declined. As a result, a delta formed at the mouth of the Chippewa, ponding Mississippi River water and forming Lake Pepin. Zumberge, in his 1952 publication, Lakes of Minnesota - Their Origin and Classification, indicated that Lake Pepin at one time extended all the way upstream to the Robert Street bridge in St. Paul, and that postglacial deposition by the Mississippi River has filled Lake Pepin from St. Paul to Red Wing, Minnesota, a distance of about 50 miles. Lake Pepin will be continuously reduced in size over a long period of time by the advance of the delta at its head as well as by filling of the lake with silt and clay (U.S. Army Corps of Engineers 1974: 37-38).

This encapsulated summary provides major highlights of glaciation and the subsequent effects on the Mississippi River Valley between St. Anthony Falls and Guttenberg, Iowa. The landforms that now exist, and those of the recent past encompassing the 10-12,000 years of human use and occupation, are by and large a direct result of glacial activities. The following discussion provides some greater detail on those landforms.

LANDFORMS OF THE UPPER MISSISSIPPI RIVER VALLEY:

Doubtless a refined analysis would foster the identification of many distinct landforms within the study area. However, both for purposes of simplification and for an enhanced understanding of human use and occupation of the region, three major forms are noted here. These are: (1) the dissected uplands and bluff tops; (2) Pleistocene and perhaps Holocene terrace remnants; and (3) the lowland floodplain of the Mississippi River.

The Dissected Uplands: Conceptualized by geologists as a once level plain, the uplands surrounding the study area are now characterized by oftentimes irregular and broken topography. Much of the local relief is the result of headward working creeks and streams that dot the landscape.

Martin, in describing some of the more dramatic dissection of uplands in southwestern Wisconsin noted:

The valleys in the upland of southwestern Wisconsin are cut rather deeply into the upland. The grades are steeper than the slope of the upland, so that the valleys increase in depth to the southward. Midway in their courses, and near their mouths, the main valley bottoms are 200 to 300 feet below the ridge tops (1932: 68).

Of more recent origin, he also indicates:

Many of the valleys and slopes of southwestern Wisconsin have been gullied notably in recent years. Some of the stream gullies are 6 to 8 feet deep. There seems to be no reason that this should be interpreted as evidence that anything unusual is taking place in the volume or load of the main streams. It is more probable that gullying has been induced by man's activities in cutting down forests, ploughing fields, excavating mines, or otherwise disturbing nature's balance in the surface drainage or the underground circulation. These gullies lie wholly in consolidated materials, never in the rock (1932: 69).

Thus, the rugged topography of the uplands can be assigned both to the older working of streams into their headlands, and to the recent economic and exploitative activities of populations of the recent historical eras. In any event, density of prehistoric and historic populations on the dissected uplands is impressionistically low. Few systematic studies have been conducted on these upland settings. Three recent examples are those of Theler (1981: 168-206), Arzigian (1981: 207-246), and the MSAS investigations in the Root River basin in Fillmore, Winona, and Houston counties in Minnesota (M.H.S. 1981: 41-44). Of course numerous selective investigations that focused on prehistoric, and, in a few cases, historic mounds document that uplands were regularly used for combined ceremonial and mortuary practices. However, full appreciation of prehistoric and early historic utilization and occupation of this major topographic zone awaits the results of additional systematic and intensive investigations.

Mississippi Terraces: Terraces constitute the second major topographic category in the study area and significant attention has been given to their description and the processes of their origin. Martin, for example, provides both maps and tabular data for the bulk of the project area (1932: 156-168). Most of the terraces, of course are formed from glacial outwash and their soils are characteristically sand and gravel with lesser constituents of silts and loessal materials. By far, the

majority of these features can be dated to the Wisconsin stage of glaciation and represent weathered valley train outwash. Others may be identified as Holocene in origin. Variation in the terraces can be assigned in part to variations in parent materials of original deposition, subsequent dissection, and dune activity. In spite of this variation, Martin notes the general distribution phenomena along the reach of the study region:

At least one tentative conclusion may now be stated, even without further fieldwork. (1) There are more and higher terraces in northern than southern Wisconsin; (2) gradients of the individual terraces increase in steepness toward the north; (3) each single terrace in southwestern Wisconsin seems to split into two or more terraces in northwestern Wisconsin (1932: 163).

Martin also notes that, using La Crosse as an hypothetical keystone, that there are two series of terraces in the study area. South of La Crosse terraces are at elevations of 20 to 50 feet above the floodplain. However, to the north, there appear to be three or more persistent terraces. These rapidly increase in height to more than 100 feet above the river. He attempts explanation of this phenomenon by suggesting:

The intermediate terraces appear at such levels as to suggest (a) that the 40 foot terrace south of La Crosse may split and form both the 60 and the 105 foot levels as it increases in height to the north, (b) that the 20 foot terrace south of La Crosse may be similarly related to both the 30 and 45 foot levels farther north, and (c) that the 20 foot level north of La Crosse is entirely independent of the 20 foot level to the south (1932: 163, 165-166).

Correlation of terraces remains an important research question to be addressed if one is to attempt more complete and sophisticated models of past human settlement behavior within the study area. Currently, Dr. James Gallagher is conducting intensive studies of archaeological sites on the terraces in that region and initial results confirm long-standing suspicions that prehistoric and historic occupations are large and numerous. The fact that terrace settings enjoy great popularity for development is not lost on cultural resource managers. It is from these topographic contexts that our information regarding past life-ways has been derived. It is also clear that the threat to the archaeological data base from current land-use practices on the Mississippi River terraces is quite severe.

The Lowland Floodplain: The third and largest major topographic feature within the St. Anthony Falls-Guttenberg region of the Upper Mississippi River Valley is the lowland floodplain. It is also the most poorly documented with respect to both human use and habitation and processes of formation and modification. Prehistorians and historians alike, for example, often talk about the lush setting and the abundant resources of the lowland floodplain. This generalization notwithstanding, very little in the way of historical or prehistoric archaeological investigations have been conducted on the lowland floodplain. Two factors come into play here. First, the lowland floodplain is not a very comfortable area to conduct either survey or excavation work and thus, if not avoided, is at least de-emphasized. Secondly, and perhaps derived in part from the former situation, the most comprehensive data have been collected from terrace settings. As new hypotheses are formulated and new models are generated, archaeologists and historians turn to the terraces once again to test and refine current models of land use, culture history, and adaptive strategy.

Soil scientists, until quite recently, have not devoted vast amounts of time and research dollars to analyses of the lowland floodplain. Most current soils maps for example, list floodplain soils as alluvial or muck soils. Personal communications with Dr. James Knox (University of Wisconsin) and Dr. Richard C. Anderson (Augustana College) indicate that possible reasons include the logistical difficulties of working on the lowland floodplain and the complexities of continuously re-worked sediments and subsequent poor soil development.

Martin describes the floodplain's general attributes:

The floodplain material is clay, silt and loam, sometimes sandy and often dark with organic matter. It may be 10 to 30 inches thick and is underlain by several feet of sand, which often grades into coarse gravel 3 to 6 feet below the surface. There are sometimes low knolls, rising 5 to 10 feet above the adjacent basins. Many of these knolls are made up of 1½ to 3 feet of fine sand, beneath which is coarser sand. The basins contain pools or lakes or swamps, where the fine silt and decayed vegetation constitute the floodplain material. There are also bayous, and abandoned channels upon the floodplain. In places the peat deposits are 10 feet or more in thickness. Always, however, the floodplain material is a surface film compared with the great thickness of glacial outwash below (1932: 152).

There can be little doubt that the lowland floodplain was an important source of resources from the earliest occupations following the last retreat of glacial ice. Historical chronicles (Marquette in Hamilton 1970, Hennepin 1698, Pike 1811, Schoolcraft 1821, Keating 1824, Featherstonhaugh 1836) serve to demonstrate the common theme of abundance of flora and fauna relied upon by Native American populations and frontier settlers. Yet

relatively few investigations have focused upon the lowland floodplain, notable exceptions being the work conducted by Stoltman and Theler (1980), Boszhardt (1982), and Boszhardt and Overstreet (1981). All of these studies were preliminary in nature, yet all produced exciting results which collectively conclude that important stratified sites buried under recent alluvium can be predicted to occur within the project area. Many of the sites discovered provide the prospects of fine preservation of floral and faunal remains. Finally, these studies demonstrate a pressing need to address this topographic setting as erosion and scouring are rapidly destroying the prehistoric and early historic record that is essential to document floodplain adaptive strategies.

RECENT STUDIES OF SEDIMENT GEOMORPHOLOGY:

Quite recently, investigators have begun to closely scrutinize lowland floodplain soils for a variety of reasons. Soil scientists from the University of Wisconsin, for example, under the general direction of Dr. James C. Knox have studied fluvial stratigraphy in the Driftless Area of Wisconsin (Knox 1972, Knox and Johnson 1974, and Knox, McDowell and Johnson 1981). For the most part, these studies have focused on erosion and sedimentation as positive correlates with climatic change. However, the data collected by these scientists and others have been put to good use by archaeologists conducting field work on the lowland floodplain (see Stoltman and Theler 1980, Boszhardt and Overstreet 1981, and Boszhardt 1982).

Through their fieldwork, sediment geomorphologists have begun to identify areas of recent (post-1800) sedimentation and have provided archaeologists with valuable heuristic devices for predicting potential site locations. As well, better understanding of the dynamics of reworking sediments provides the field archaeologist with the capabilities to selectively inventory lands that have great potential for site discovery while at the same time avoiding post-historic landforms that could not possibly harbor undisturbed prehistoric deposits. Future interdisciplinary investigations with combined archaeological and sedimentological objectives should be given very high priority. Refinement of the understanding of lowland floodplain landforms will yield very high returns for both management and research objectives.

The principal objective of the most recent study cited is noted by authors (Knox, McDowell, and Johnson) as:

. to describe the history of
fluvial activity in the Driftless Area

valley bottoms as perceived to have been associated with climatic and vegetative changes of the Holocene, here defined as the last 10,000 radiocarbon years (1981: 107).

Building on the previous investigations of Bernabo and Webb (1977), Borchert (1950), Davis (1977), Knox, Bartlein, Hirschboeck, and Muckenhirn (1975), Webb and Bryson (1972), Wright (1968), and others, the authors provide a summary of Holocene climatic changes in the Driftless Area:

During the last 10,000 years, in the Driftless Area, average characteristics of temperature and moisture have changed from cool/moist (10,000-7500 BP), to warm/dry (7500-6000 BP), and back to cool/moist (6000-0 BP). During the period of maximum warmth and dryness, average annual stream runoff probably was 40-60 percent less than the average runoff of the present. The three climatic episodes produced three major depositional units which also reflect long-term changes in sediment sources and flooding characteristics. Floods associated with snowmelt and/or relatively low intensity frontal precipitation appear to have been a major cause of erosion and sedimentation of alluvium prior to 7500 BP. Between 7500 and 6000 BP, convectional thunderstorms probably were a dominant cause of floods and may explain why erosion and deposition of sediments were concentrated in small watersheds of less than 10 km². Since about 6000 BP, floods associated with snowmelt and/or relatively high intensity frontal precipitation apparently have been a dominant cause of erosion and sedimentation of alluvium. Several minor fluvial episodes representing differences in intensity of erosion and deposition of alluvial sediments also are apparent for the period since 6000 BP. Relatively active erosion and sedimentation characterized the period 6000-4400 BP, 3100-1800 BP, and 1200-800 BP. In contrast, the periods from 4400 to 3100 BP, 1800-1200 BP, and from 800 BP to the time of agricultural settlement were characterized by relatively stable conditions. Because the gradual changes in vegetation, implied in pollen diagrams, correspond poorly to the relatively abrupt changes apparent in the fluvial stratigraphy, we suggest that variations in meteorological conditions associated with recurrence intervals of relatively large floods provide the best explanation for the episodic character of Holocene fluvial activity in the Driftless Area (Knox, McDowell, and Johnson 1981: 107).

It should be noted that, while the definition of three major climatic episodes associated with major events of fluvial

erosion/deposition activity during the time of prehistoric man's occupation of the study area is a significant contribution to the regional archaeology, extrapolation outside of the Driftless Area should be cautiously applied. Until additional data are published, it would be best to focus on the secondary drainages of the Driftless Area as other processes may be at work in the main stem that are not coincident with those postulated by Knox, McDowell, and Johnson (1981). Other scholars have presented varying reconstructions of past climatic events and prehistorians have utilized these data to develop models of subsistence and settlement in the Upper Mississippi Valley (see for example Wright 1968, 1976, 1974, Wendland and Bryson 1974, Webb and Bryson 1972, Brown and Cleland 1968, Butzer 1964, and Baerreis and Bryson 1965). The subsequent generalized reconstruction attempts to summarize the interpretations of both changing climate in the Upper Mississippi Valley and the effects of such changes on resident human populations.

MODELS OF MAN'S RESPONSE TO CLIMATIC EPISODES IN THE UPPER MISSISSIPPI VALLEY:

The immediate post-glacial environment of the St. Anthony Falls-Guttenberg segment of the Upper Mississippi Valley has been most often described as a spruce parkland (Quimby 1960, Wright 1968). Remnants of buried spruce forests at several stations tend to support this general model. Brown and Cleland, however, argue for a mixed composition of species (1968). Rather than a closed spruce parkland, Brown and Cleland suggest that mixed hardwood and conifer species may have been important constituents of the dominant spruce forest that has been described by Wright (1968) as reaching from the plains to the eastern seaboard. In spite of these theoretical differences, there appears to be general agreement that the spruce dominated forest with its poorly defined drainage systems of the early post-glacial era supported significant numbers of Pleistocene mammals. Large herbivores, (mammoth and mastodon) are often assumed to have been a keystone of subsistence of the earliest populations of the region, circa 11,000-9,000 B.P. Much attention in the generalized accounts of prehistory is given to this theme. Empirical data, however, are neither dramatic nor convincing. The record of Pleistocene herbivores in the Upper Mississippi Valley is substantial, the demonstrated association of man and mammoth/mastodon is woefully elusive. Important though problematical evidence supports the utilization of other Pleistocene mammals such as extinct forms of bison, barren ground caribou, and giant beaver.

Rather rapid climatic changes are hypothesized by most investigators of post-glacial vegetational history. Wright

for one, based on pollen data from the well known Kirchner Marsh postulated that spruce forest was quite rapidly displaced by pine forest at about 10,000 BP. More importantly, this transition is viewed as having taken place within the short duration of a few hundred years (1976: 589). Additional data from the Driftless Area supports similar change in southwestern Wisconsin between 10,000 and 9500 BP (Davis 1977). This of course sets the stage for one of the most important climatic events of the study area, and one that has seen some disputes in interpretation, the fluctuation of the prairie-forest ecotone in a general easterly, and later, westerly direction. There is no firm evidence in the archaeological record, because comprehensive subsistence studies are lacking, that would allow for understanding the effect of the movement of this major ecotone on human populations in the study area between 11,000 and 7000 BP.

Since 7000 BP, there has been a general westward retreat of the prairie-forest ecotone. The temporal and spatial dimensions of this movement have recently been mapped by Bernabo and Webb (1977). These movements, of course, portray an image of climatic shift and Wright has suggested:

The Holocene pollen sequence in the Minnesota areas fits clearly into a climatic model that calls for a gradual increase in warmth and dryness to a maximum, and then the reverse. There is no reason to suspect that the migration of the dominant pollen-producing plants lagged far behind the climatic change (1976: 590).

Knox, McDowell, and Johnson (1981) note some variations in post-glacial vegetational history in the project area:

The early-Holocene pine forest at Kirchner marsh soon was replaced by deciduous trees of elm and oak. In the Driftless Area, at the Elvers-Blue Mounds site, pine dominance continued throughout the Holocene because of the favorable habitat conditions on sandstone bluffs, although oak and other deciduous trees became important after c. 9500 BP. (ibid: 109-110)

Based on the work of Wright (1976), Davis (1977), and Knox, McDowell and Johnson, (1981) cyclical or persistent drought very likely had some debilitating effects on prehistoric man in the Upper Mississippi Valley. Generally, the picture is one where the prairie-forest ecotone pushed eastward. The maximum easterly distribution in Minnesota was achieved by about 7300 BP and area lakes were depleted of their moisture supply. Similar effects were recorded for southwestern Wisconsin and Davis (1977) notes this severe droughty condition through changes in pollen rain, slope wash, and the interruption of Holocene peat

accumulation at two stations, the Elvers-Blue Mound site and at Hub City bog.

The effects of this droughty era on human adaptive strategies is not well documented. However, these data can serve to construct working hypotheses regarding the seeming abandonment of the area by early Holocene big game hunters. At the same time, populations that could be identified as early Archaic are not well represented--perhaps a correlative relationship is warranted.

Sometime after about 7000 years BP, these processes were reversed and the prairie-forest ecotone began its westward movement. Wright states that while this trend may have initially been a gradual one, the moister and cooler conditions may have accelerated and by 5500 BP southeastern Minnesota prairies were replaced first by oak savanna and then by deciduous forest (1968: 83). Intensification is viewed as even greater by 4000 BP. Knox, McDowell, and Johnson (1981) lend support to Wright's view by noting that peat growth was accelerated on the flood plains of the Driftless Area by 4400 BP citing two field stations, Brush Creek and Tamarack Creek. The implications of these shifts to cooler and moister conditions have not been ignored by archaeologists who would generally agree that the more sophisticated cultural developments noted in the prehistoric record may be dovetailed with climatic shifts. A general theme of more elaborate material culture, greater population density, and increasingly stable settlements can be suggested for the time frame noted above.

During the 1960's, prehistorians developed models of more recent shifts in Holocene climate and their implications for prehistoric man in the Upper Mississippi Valley. Two such attempts that had significant influence on archaeological interpretations are those of Griffin (1961) and Baerreis and Bryson (1965). For the most part, these and other interpretive frameworks follow the climatic episodes as defined by Wendland and Bryson (1974) noted in Table 3.

Table 3: Climatic Episodes (After Wendland and Bryson 1974)

<u>Episode</u>	<u>Chronology</u>	<u>Conditions</u>
Sub-Atlantic	2700-1680 BP	Moist/cool
Scandic	1680-1260 BP	cool
Neo-Atlantic	1260-850 BP	Dry/warm
Pacific	850-400 BP	cool/moist
Neo-Boreal	400-100 BP	cool

Table 3 represents the suspected types and periods of fluctuations based on available data at the time of the Wendland and Bryson publication. More recently, Baerreis et al (1976) have presented a slightly different scheme of recent Holocene climatic variations. Undoubtedly, as more data are acquired from bogs, archaeological contexts, sediments, and other sources, Holocene climatic variation models will continue to be revised. The important facet for prehistorians will be to test and monitor these fluctuations as they are represented in the archaeological record. Those models which cannot be supported will be revised and rejected. One exemplification is the hypothesis that the deteriorating climate of the Neo-boreal episode made corn horticulture a precarious practice. However, in the Upper Mississippi Valley there is no significant evidence that cultivation of corn ceased or became less important. In fact, regional populations seemed to be little influenced by this climatic deterioration which had been readily identified by various investigators. The question is not one of whether climatic fluctuations occurred, nor is the variation in the lengths of duration presented by various scholars of primary importance. For interpretations of the prehistoric record we desire and require more comprehensive and sophisticated data that will serve to elucidate the influence of climatic shifts on adaptive strategies in the Upper Mississippi River Valley.

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A SUMMARY OF THE PREHISTORY OF THE UPPER
MISSISSIPPI RIVER VALLEY - GUTTENBERG,
IOWA TO ST. ANTHONY FALLS

INTRODUCTION: An up to date regional synthesis of the Upper Mississippi Valley is currently lacking. In part this may be assigned to significant biases in the archaeological data base of the region. Some areas such as southwestern Wisconsin, northeastern Iowa, the Red Wing area in Minnesota, and east-central Minnesota have been enhanced by recent sub-regional syntheses (see for example Stoltzman 1979, Gibbon 1979, and Benn 1980). While these recent summaries are welcome additions to the regional archaeological literature, they are focused on rather restricted temporal and spatial units of the prehistoric record. Other regions of the study area such as northwestern Wisconsin and southeastern Minnesota are less well known. Trow's recent survey of the Root River basin, under the auspices of the M.S.A.S. is a notable exception. (1981: 91-108). Publication of current research results by several institutions and individuals are eagerly awaited and will serve as substantial additions for the less well documented areas of the region. To attempt a comprehensive summary here is a humbling experience. In some areas and for some stages of the regional prehistory the data are overwhelming. In other situations, less comprehensive reports and accounts are tantalizing, exciting, and frustrating. In any event, this attempted summary's from a rather different view than the last attempt by Bennett in 1952. At the time, Bennett was perhaps correct in his assessment of the Upper Valley based on extant data:

Of the various regional provinces of eastern United States archeology, the northern Mississippi Valley perhaps is least deserving of the appellation, "glamorous." Up there are found no important and mysterious hints of Middle American influences; no cross-dating with Pueblo pottery; no vast towns with ceremonial plazas and elaborate temple mounds; no large and complex cultural remains of the classic stature of Ohio Hopewell or southern Middle Mississippi. The Aztalan Site, representing a Middle Mississippi push into southern Wisconsin, provides some exception to these generalizations, but it is an isolated case and its duration was short.

In most cultural epochs, the northern valley was a story of migratory or semi-sedentary Indians who, only in the later periods, possessed the art of pottery-making, who lived in small and medium-sized villages and simple campsites, who often built burial mounds, and who subsisted mainly on hunted and gathered foods.

Although lacking in glamor, the northern Mississippi Valley possesses a number of important historical problems. These may be listed briefly: (1) the emergence of western Woodland from Early Woodland state; (2) the emergence, blending, and disappearance of Hopewellian manifestations from and in the generalized western Upper Mississippi cultures; and (4) the status of late glacial and early post-glacial man in the north and east (Bennett 1952: 108).

How different are the perceptions of Upper Mississippi Valley archaeology some 3 decades hence. Current research being conducted in Minnesota, Iowa, and Wisconsin is beginning to yield significant results. The important body of information relating to late glacial fluctuations, climatic change, and the fluctuations in plant and animal communities make the Upper Mississippi Valley a phenomenally rich research universe for understanding prehistoric man's response to the ever-present challenges of changing habitats. Because the study area is a recognized hub of interaction in both historic and prehistoric times, exciting potential exists to examine the effects of both ideas and tangible commodities on regional residents. Suffice it to say, the region holds no less promise, nor is the prehistory any less "glamorous" than the middle or lower valleys, the American southwest, or any other region in North America. Fortunately, the many significant contributions made by regional prehistorians since Bennett's synthesis should generate a more exciting and optimistic tone. When this will be accomplished and by whom is something the region's senior scholars should consider.

EARLY INVESTIGATIONS:

Before the middle of the 19th century the Upper Mississippi Valley's abundant and dramatic prehistoric sites had attracted the attention of men of letters and scientific curiosity. The theoretical fuel that fired this interest was of course the great moundbuilder debate. Intense interest in discovering the origins of a hypothetical superior race who were believed to have been responsible for the vast numbers of mounds and other earthworks was certainly stimulated by stereotypes and attitudes of the time (Mallam 1976a). Perhaps this

prejudicial attitude of Native Americans as indolent and lacking cultural-technical sophistication stirred the curiosity and stimulated the efforts of one of the region's first archaeological investigators. One William Pidgeon, an apparent avid believer in the ancient race of Mound Builders, conducted extensive survey work in the Upper Mississippi Valley. His work was conducted during the years 1840-1841 but was not published until 1858. Entitled "Traditions of the De-Coo-Lah and Antiquous Researches," Pidgeon's book, according to Mallam (1976a) was widely read during the middle 19th century. Pidgeon's interpretations, as well as his plats of many since destroyed mounds and mound groups, would certainly be described as fanciful by contemporary students of prehistory. In fact, late 19th century scholars had already begun to question both the accuracy and conclusions of Pidgeon's research. The Right Reverend Stephen D. Peet, whose own notions have been described by some as romantic, was a prolific reporter of ancient earthworks (1882, 1883, 1884a, 1884b, 1884c, 1884d, 1885, 1887a, 1887b, 1889a, 1889b, 1889c, 1889d, 1889e, 1890, 1891a, 1891b, 1891c, 1892a, 1892b, 1892c, and 1895) and publicly questioned the credibility of Pidgeon's interpretations (1882: 55). For a more recent evaluation of Pidgeon's investigations, readers are referred to Mallam (1977: 16, 1976a: 159-160, and 1976b: 22).

Two pioneer archaeologists in Minnesota were also caught up in the Mound Builder research. For a period of 15 years, from 1880 through 1895 Theodore Lewis and Alfred Hill undertook what became known as "The Northwestern Archaeological Survey." An interesting tandem in which Lewis provided the field expertise and Hill provided the funding, this team platted many mounds and groups within the region defined by the St. Anthony Falls-Guttenberg limits. The data provided by the Northwestern Archaeological Survey are of substantially more use than those provided by Pidgeon as Lewis was an accomplished surveyor. This takes on a considerable dimension when one is cognizant of the fact that many of the earthworks surveyed by Hill and Lewis have long since been obliterated. Comments on the Northwestern Archaeological Survey may be found in Winchell (1911: IX-X), Keyes (1928), and Mallam (1976b: 22-23).

Two unfortunate aspects of the Hill-Lewis investigations can be noted. First, little of the information was published (Lewis 1885a, 1885b, Winchell 1911). However, the vast majority of notes, maps, and unpublished manuscripts are housed at the Minnesota Historical Society, Division of Archives and Manuscripts. The second limitation of the Hill-Lewis investigations is that very little in the way of excavations were conducted. Keyes explains this de-emphasis

on excavation and lack of concern with habitation sites by indicating that Hill and Lewis were primarily interested in securing data that would support the notion of the superior race of Mound Builders (1928: 103). Thus, collection of artifacts or other materials from habitation sites would represent nothing more than the accumulation of primitive material remains not associated with Mound Builders, but with prehistoric or historic period Native Americans.

Simultaneous to the work of Hill and Lewis, the Smithsonian Institution supported investigations throughout the Eastern United States. Again, the question addressed was the Mound Builder-American Indian hypothesis. The Bureau of American Ethnology conducted exploration for 10 years with Cyrus Thomas as the general director of the project. Thomas divided the eastern U.S. into eight geographical districts, one of which, the Wisconsin District, included the Upper Mississippi Valley and much of the current study region. Agents under Thomas' supervision not only mapped mound groups, but conducted rather extensive excavations. In comparison with contemporary techniques, one would not expect the B.A.E. excavations to compare favorably. However, much information regarding mound construction and mortuary behavior can be found in the various reports published by Thomas (1884a, 1884b, 1886, 1887a, 1887b, 1891, 1894, and 1898).

Other notable scholars who made notable contributions during this period of early investigations were Lapham in Wisconsin and Brower in Minnesota (see Lapham 1855; for a discussion of Brower's contributions see Birk 1979). Another nineteenth century archaeologist whose contributions cannot be overstated was Ellison Orr. Orr was raised and spent the greater part of his life in northeast Iowa. His interests in the regional prehistory were kindled and developed into active fieldwork in 1878 (Orr 1963, Vol VII: 119). By the arrival of the 20th century Orr was expending much of his leisure time exploring rockshelters, mounds, and open-air habitation sites in the study area. During these years he began to amass a large collection of archaeological materials recording their locations of origin, and he mapped many mound groups and rockshelters. He published some of this information in local and regional journals (1913, 1914, 1917a, 1917b).

Somewhat later, Orr published additional reports and prepared a number of manuscripts after joining with Dr. Charles R. Keyes and the Iowa Archaeological Survey. The organization was formed in 1921 with Keyes as its director.

During the following decade, Orr cooperated with Keyes in an informal arrangement and prepared a number of additional manuscripts relating to northeastern Iowa and southwestern Wisconsin (e.g. Orr 1927). In 1930, Dr. Keyes secured funding to employ Orr on a formal basis with the Iowa Archaeological Survey and thus Orr continued his important research until his death in 1951. During this time he completed 12 manuscript volumes summarizing his research in the region. Following his death, Orr's unpublished manuscripts were housed at Effigy Mound National Monument and his collections, along with those of Keyes, were housed at the State Historical Society of Iowa. Recent summaries relating to the research potential and the organization of the Orr-Keyes collections have been provided by Tandarich and Horton (1976) and Tiffany (1981). McKusick (1963, 1975, 1979) should be consulted for a more complete appraisal of developments in Iowa prehistory.

During the 1930's Wisconsin and Minnesota also initiated statewide surveys and excavations. In Wisconsin, the primary institution conducting archaeological research was the Milwaukee Public Museum. Under the initial direction of Dr. Sam Barrett, and later Dr. Will C. McKern, survey and excavation work was directed primarily toward the definition of spatial units of the archaeological record. This of course culminated in the Midwestern Taxonomic Method of Culture Classification (McKern 1939). While McKern's method was widely employed and served the purpose of organizing site data, it resulted in the constricted time depth for prehistoric cultures which was not overcome until the late 1950's with applications of radiocarbon assay. Some of McKern's more important investigations along the Mississippi River were conducted at Middle Woodland sites in the Trempealeau vicinity and at Oneota sites near La Crosse (refer to McKern 1921, 1931a, 1931b, 1942, 1945).

In Minnesota, Birk summarizes the development of institutionally sponsored research:

The second major research period began in 1932 when University of Minnesota anthropologist A.E. Jenks initiated a statewide program of archaeological investigation. This endeavor, which later continued from 1938 through 1958 under the direction of Lloyd A. Wilford, was basically concerned with regional culture histories and linking historic Indian groups with their archaeological past. Under Wilford's guidance, site surveys and excavations were conducted over broad areas of the state, and the first serious attempts were made to organize Minnesota's prehistory in units of time and space (1979: 49).

Throughout the 1940's and 1950's programs of survey and excavation in Iowa, Minnesota, and Wisconsin waxed and waned with the availability of professional staff at institutions in those states. These fluctuations were the result of a variety of events, some as notable as the second World War, others less significant, such as modifications of budget, student populations, and the growth or decline of departments and staff at many institutions. Significant publications continued to appear, several were directly related to the project area such as Wedel's work on the Upper Iowa River (1959), Logan's summary of the Woodland Complexes in Northeastern Iowa, completed in 1958 but not published until 1976, and numerous others.

In the 1960's trends in North American archaeology were reflected at institutions throughout the region. Birk notes, for example, the developments at the University of Minnesota:

The 1960's began a period of rapid growth and changing directions in Minnesota archaeology. An increase in manpower and financial backing complemented a new appreciation of historic sites and a redefinition of goals placing greater emphasis on ecological concerns. Researchers such as C. Thomas Shay (1971), Gordon Lothson (1967: 29) and former State Archaeologist Elden Johnson (1969: 38-39) initiated studies seeking to understand archaeological "units" (e.g., components, sites, traditions) in their relation to Minnesota's diverse and changing ecological settings. Johnson, in particular grasped the importance of environmental context in pursuing prehistoric research and in 1970 promoted the idea of establishing regional interpretive centers around "the concept of changing patterns of land utilization through time" (Johnson 1970: 154) (Birk 1979: 49-50).

Wisconsin was also fortunate with the addition of Dr. David A. Baerreis to the staff of the University of Wisconsin. Early on, Baerreis established close ties with Dr. Reid Bryson at the Center for Climatic Research and many of Baerreis' students set out to explore past land-man relationships (see for example Gibbon 1969, 1972, Hurley 1975, Henning 1970, Benn 1976). Iowa, unfortunately, did not develop doctoral programs at its state universities, and thus, had fewer opportunities to develop similar ecological environmentally oriented programs. Nonetheless, many Iowa students completed their studies at the University of Wisconsin and the influence of Baerreis is consistently strong in Iowa research (see for example Harvey 1979, Henning 1970, and Tiffany 1978). For a more comprehensive discussion regarding the development of archaeology at Iowa universities see McKusick (1975).

By the 1970's all three states bordering the study area had established positions in State Government. Staff of the various State Archaeologists and of State Historical Societies were conducting investigations throughout the Upper Mississippi Valley. Although the organization, funding, and responsibilities varied from one state to the next, impressive strides were made in expanding archaeological research as well as providing impetus for conservation archaeology and articulation with avocational communities in Iowa, Wisconsin, and Minnesota. Iowa, in particular, has expended considerable effort in disseminating information regarding prehistory to its interested residents (Alex 1980, Anderson 1981, 1975). The Minnesota Historical Society has provided strong support for the amateur community and its record of publication is commendable (see for example Johnson 1969). In Wisconsin, the Milwaukee Public Museum has attempted to provide general reference material for the interested public (e.g. Ritzenthaler 1967, 1976). Avocational certification programs are established in Iowa and Minnesota, and, though in a developmental stage in Wisconsin, not currently in operation in that state. The collective result of these efforts has been increased reporting of archaeological sites within the specific project boundaries. For a good example of positive results see Oerichbauer (1976).

Currently, most archaeological investigations conducted in the project area defined by the Guttenberg-St. Anthony Falls limits, as well as surrounding regions, is done under contract auspices for federal, state, and local agencies, and, to lesser extent, private industry. A significant amount of this contract work yields little useful information. Oftentimes execution is poor and adds little to contemporary research goals. Finally, and most importantly, results of contract work are not adequately disseminated to the interested public or professional archaeological communities. Hopefully, the 1980's will witness a change of direction so that tangible benefits will be realized both by the interested public and those conducting regional research.

CULTURAL-HISTORICAL FRAMEWORKS: 10,000 B.C. TO A.D. 1600

The following cultural-historical framework reflects an attempt to summarize the general consensus of prehistorians regarding the prehistoric occupational history of the Upper Mississippi Valley. It is intended only as a most general overview and limitations of time and space have certainly resulted in serious omissions. These limitations notwithstanding, the cultural-historical framework does provide a series of contexts within which archaeological data are interpreted. As well, attempts are made to highlight those segments of the prehistoric record where knowledge is limited, some of the contemporary research questions that regional scholars have addressed, and those temporal-spatial units that enjoy somewhat firm foundations owing to more intensive and extensive investigations. For the sake of brevity we have chosen to utilize only four major units: (1) PaleoIndian; (2) Archaic; (3) Woodland; and (4) Mississippian. These units, in turn are refined to varying degrees as the extant data allow.

PALEOINDIAN:

Precisely when the first inhabitants of the Upper Mississippi Valley entered the region, or, for that matter, the North American continent is a point of theoretical contention among prehistorians. Some posit colonization of the region some 20,000 or more years ago. Others maintain, consistently and firmly, that a 12,000 year baseline is the only acceptable framework. A second major issue relates to the geographical regions from which populations entered the Upper Mississippi Valley. Most look to the west, if for no other reason than the chronology of discoveries, for the origins of regional PaleoIndians. Others are enticed by the growing body of data that substantiate PaleoIndian occupations east of the Mississippi River. Some have even come to view the PaleoIndian tradition as basically eastern with some well known western variants. However, it should be noted that the typological frameworks utilized by most prehistorians draw heavily from those defined from sites in the western United States. A third line of inquiry with regard to these initial occupants revolves around reconstruction of their lifeways. Environmental reconstructions indicate extensive spruce parkland coincident with man's entry into the region. This phenomenon along with the occurrence of Pleistocene megafauna such as Mammoth and Mastodon has fostered the characterization of PaleoIndians in the Upper Mississippi Valley as Big Game Hunters. Detractors of the Big Game Hunting model for PaleoIndians can find solace in the lack of an undisputed association of PaleoIndians and Pleistocene fauna in the study region. Thus, three major questions have yet to be resolved--the time of entry of man into the Upper Mississippi Valley, eastern vis-a-vis western origins for these populations, and accurate reconstruction of the lifeways of regional Paleo-Indian populations.

Of course, the limitations regarding our understanding of PaleoIndian prehistory in the Upper Mississippi Valley study area derive from the absence of excavated contexts. Most all information emanates from surface finds of highly variable reported contexts. Even though these limitations hinder refined culture history, explication of adaptive strategy, and meaningful analyses of processual bent, archaeologists have established some generally acceptable temporal units for PaleoIndian manifestations. These categories are, Early PaleoIndian and Late PaleoIndian.

Early PaleoIndian:

Fluted projectile points are the diagnostic type fossils of the Early PaleoIndian period. Clovis-like types ostensibly are dated to approximately 11,500 B.P. and significant numbers have been found in upland areas adjacent to the study area. Lynn Alex summarizes the distribution of such types in Iowa noting their occurrence in Allamakee and Clayton counties (Alex 1980). Stoltman and Workman (1969) provide a limited distributional study of fluted points in Wisconsin, again with notable frequencies found in the uplands adjacent to the Mississippi River. In Minnesota, Johnson (1978) and Steinbring (1974) note the occurrence of fluted points that have been encountered as surface finds at several locations.

Considered to be more recent than Clovis-like forms, a considerable number of Folsom-like fluted points have been reported from locations that again suggest a primary distribution in upland contexts.

Beyond the distribution studies, little has been accomplished that would serve to resolve major research questions relating to Early PaleoIndian habitation in the Upper Valley. Palmer and Stoltman's attempt to reconstruct the association of the Boaz mastodon and a fluted point manufactured from Hixton Silicified Sandstone is an interesting and notable effort (1976). However, no one would argue that the context has been demonstrated and the possibility, in spite of much effort on the part of the investigators, remains that the association is faulty. Tenuous possibilities are also known from the Bear Valley in Richland County, Wisconsin. This small valley yielded the Carberry mastodon tusk at the turn of the century and has also produced several fluted points. Another interesting yet frustrating "association" is reported by Alonzo Pond (1937) wherein both projectile points and a copper implement were found with the remains of extinct bison. These finds have been reviewed by Palmer (1954); however, the projectile points appear to have been misplaced, or possibly stolen, soon after their discovery (C.E. Brown Papers, Box 39, S.H.S.W.).

Continued work at the Boaz mastodon locus, investigations currently being pursued by Minnesota scholars which seek to record associations of fluted points and extinct megafauna, additional excavations at the Interstate Park bison find, and additional work in Clayton and Allamakee counties in Iowa would shed light on this difficult problem.

Within the specific limits of the study area the horizon markers of Early PaleoIndian are rare and equivocal. From Minnesota, for example, a single fluted point has been reported from the west bank of the Mississippi River near the University of Minnesota. Steinbring, however, expresses some reservations regarding both the significance and location of the find as reliable evidence for Early PaleoIndian occupation (1974). An additional fluted point was brought to the attention of Dr. James Gallagher at the University of Wisconsin-La Crosse. This specimen was found, apparently having been washed out of a Pleistocene terrace remnant, on the Trempealeau Wildlife Refuge (Gallagher, personal communication). Finally, a third fluted point was reported many years ago from a possible terrace-floodplain context by Bennett (1945: 13). This report was a restatement by Bennett of Nickerson's field notes:

In the main ravine at Portage, buried in a stiff calcareous loess, we have found fine fragments of charcoal scattered over a space of 40 feet or more. A torrent of water...in May 1895, exposed this deposit and it continues to appear as the gorge thus formed wears back into the older flood plain of the ravine. This soil is probably, but not certainly, a re-distributed or modified loess. If not a modified loess it is either a river deposit or the base of the river terrace or stratified clay beds, which it seems to underlie. In any case, the charcoal seems to have been deposited in what was once soft mud, by the action of water, and is therefore by no means a recent deposit.

In addition to this charcoal, about 120 feet down (south) the ravine, lying in a depression in the loess, was a pocket of ash and charcoal and a projectile point, all at the same depth as the other charcoal. The point is a crudely-chipped single flake, with a thinned base; "ears" produced by a concave base and a slight contraction above the base. The point is very vaguely Folsomoid in outline, but is similar to the Woodland material of the area (Bennett 1945: 13).

Bennett conducted additional investigations at the Portage ravine and with the aid of a geologist confirmed the early context:

The soil profiles checked perfectly with Nickerson's descriptions. A local geologist states that the upper deposit is certainly the remains of the Galena River terrace, deposited in the ravine in post-glacial times. Since the point and charcoal were found in the lower clay, the authenticity of the find as "early" seems to be substantiated (Bennett 1945: 13).

While this last fluted point context is south of the Pool 1-10 configuration, it is the only well described context of possible Early PaleoIndian materials in a floodplain setting. These early artifacts are quite rare in lowland situations. The question remains; is this a function of collector bias and easy access to cultivated lands on the terraces and uplands, or does this mean that the earliest occupants of the Upper Mississippi Valley did not find the lowland floodplain habitat suitable for their needs? Given the dynamics of the river and the reworking of sediments, are the lowland floodplain topographic features too recent to harbor PaleoIndian remains? This of course would except the Pleistocene and early Holocene terrace remnants. Clarification of these questions awaits in-depth study of the floodplain sediments and correlation of archaeological data and those derived from sediment geomorphology. This approach seems to be the most promising and economical means of securing information regarding the earliest occupations of the study area.

Late PaleoIndian:

The distinctions between Early and Late PaleoIndian horizons are based largely on artifact styles. Acceptable temporal brackets for Late PaleoIndian populations range from approximately 8,000 to 4,500 B.C. These estimates are based on stratigraphic grounds provided by Salzer (1969, 1974) and by typological bases noted by Mason (1963). Unfluted lanceolate projectile point forms serve as the diagnostic type specimens and these may be subdivided into two distinct categories: stemmed and non-stemmed forms. The latter, non-stemmed forms would include such type categories as Plainview, Agate Basin, Brown's Valley and others. The former are characterized by defined types which include Eden and Scottsbluff.

Several reconstructions of Late PaleoIndian lifeways have been developed by North American archaeologists. In this region Quimby's Aqua-Plano tradition (1960) and Mason's (1963) Late PaleoIndian culture stage share many characteristics. Mason's categorization is somewhat more recent than Quimby's and places less emphasis on association with early post-glacial fossil beaches. As a result, his definition is likely more appropriate to the study area than Quimby's:

By Late PaleoIndian I refer to the cultural stage and stone technology generally following the use of fluted points and generally preceding the emergence of Archaic cultures with their distinctly different chipped stone industries, ground and polished stone tools, employment of copper, and evidence of the development of regional traditions in part consequent to the "settling in" and subsistence utilization of varying ecological situations. This stage and period-they are not the same thing though they have frequently been confused-have been called

Late Paleo-Indian or Early Archaic depending on the not always explicit frame of reference, and Quimby has characterized them as dominated by the "Aqua-Plano" tradition (1960: 34-42). For reasons propounded elsewhere I use the term Late Paleo-Indian to refer to the general cultural stage (and also period it occupied) manifested, in the Upper Great Lakes, by a variety of lanceolate points and associated chipped stone tools made by apparently highly nomadic hunters and sometimes found in primary association with fossil beaches formed during the early post-glacial period (Mason and Irwin 1960: 55; Mason 1962: 233) (Mason 1963: 200-201).

Like the fluted point traditions, those of the Late PaleoIndian period are not well known from the immediate environs of the Upper Mississippi Valley flood plain. Wilford (1941: 247) describes a leaf-shaped projectile point with a concave base from the La Moille Rockshelter in Minnesota, and Logan (1976: 112) notes the significant sample of 30 specimens from northeastern Iowa. His distribution includes:

...Spring Hollow Rock Shelter No. 2; Elephant Site; Waterville Rock Shelter; Jeffery Edwards Creek Rock Shelter; Pufahl Site, Allamakee County; Gingerstairs Rock Shelter No. 2; Miscellaneous sites in Winnesheik County (Logan 1976: 112).

As with interpretations of Early PaleoIndian lifeways, regional reconstructions tend to mirror those from the Plains sites, which often indicate big-game exploitation. The limitation of this model, however, lies in our superficial knowledge of Late PaleoIndians in the Upper Mississippi Valley. Most documentation derives from surface finds in the collections of avocational archaeologists. Thus we still do not have adequate controlled data to assess utilization of the lowland floodplain during this time period. Again, the most promising avenue to enhance our understanding may lie with more comprehensive studies of the sediments that mantle the valley floor. Of additional utility is a study currently in process. Jeffery Behm, University of Wisconsin-Madison, is compiling information with regard to the distribution of both PaleoIndian and Early Archaic projectile point styles which may serve to shed light both on the territorial ranges of PaleoIndians in the Upper Mississippi Valley and the relationships between those populations identified as Late PaleoIndian and the succeeding stage of the Early Archaic (Personal Communication).

In summary, the gaps in the extant literature and in unpublished records are many. Yet, given the most acceptable interpretations of the archaeological record, such gaps are predictable. Mason's recent synthesis of the Great Lakes Region is certainly apropos regarding our understanding of PaleoIndians, primarily from dissected upland zone, of the study area:

Unfortunately for ease of discovery, these earliest inhabitants were few in number and lived in such small-scale, widely scattered, nomadic, and lightly equipped societies that they left only a scanty archaeological record. And because they were the first people, erosion has had a longer time to gnaw on their remains.

As if in modest compensation for these latter handicaps, the PaleoIndians sometimes left their traces at locations that make little sense when compared to the camp and village preferences of later people: at lonely windswept perches high atop hills or even mountain spurs, or on the relatively slighter elevations of ancient strandlines miles away from the nearest water or any other now recognizeable resource. Such locations have only recently come to make some sense as archaeologists have grown to realize how much the environment has changed since men first infiltrated the Great Lakes and the northeast corner of the continent. So while the traces of these ancient folk are rare compared with most later times, here and there they signal like beacons on the raised shores of ancient lakes. They invite correlations among past human actions and the extinguished conditions by which they were partly shaped (1981: 82).

This scenario, as well as the extant data, limited as they are, would foster the interpretation that within the study area, the only suitable habitation areas are to be found on terrace or terrace remnants. Confirmation by a refined Holocene sediment chronology is eagerly awaited.

ARCHAIC:

The Archaic traditions have long been recognized by prehistorians working in the American midwest. As data became more comprehensive, definitions regarding these prehistoric cultures were correspondingly modified. Initially, the term, 'Archaic' was applied to stone tool forms that were recognized from most PaleoIndian contexts. By comparison, the tools seemed in many ways more primitive and less elaborate than earlier forms and the concept of archaic form and function was applicable. Somewhat later, with the addition of subsistence and settlement studies, various interpretations came to focus

on the regional aspects of these cultures with emphases placed on localized and seasonal subsistence and settlement. For a summary of the evolution of definitions of the Archaic traditions, refer to Fowler (1959: 7-8).

Most current perceptions of Archaic populations reflect the highly nomadic hunting lifeways of earlier cultures are replaced by groups who have a stronger sense of territory. Adjustments are made to specific environmental and ecological settings wherein a diverse range of plants and animals, including both large and small mammals, are exploited in a seasonal round. As these regional populations expand their collection systems, demographic phenomena of population growth and stabilization are reflected in the archaeological record. To monitor and compare these developments, archaeologists have defined three rather arbitrary segments in this continuum, the early, middle, and late Archaic periods. As with any imposed classificatory device, the classic aspects of these period manifest real and measurable differences while the transitions from one to the next appear less distinct.

These Early, Middle, and Late Archaic periods have been summarized for the Eastern United State by James B. Griffin (1967), each with its own characteristics:

Early Archaic: (9,000-6,000 B.C.), lithic assemblages are characterized by a variety of stemmed and basal-notched projectile points. Strong evidence ties Early Archaic populations to riverine habitats.

Middle Archaic: (6,000-4,000 B.C.), additions to lithic assemblages include marked increase in utilization of pecked and polished or, ground stone, tools, ostensibly for processing plant foods and indicative of increasing reliance on this aspect of subsistence. Again, emphases are indicated for exploitation of riverine habitats and extraction of fresh water mussels is suggested.

Late Archaic: (4,000-1,000 B.C.), most flamboyant expression of Late Archaic period is the development of pan-regional mortuary cults or complexes with long-distance exchange systems that emphasize exotic commodities. Judging from the size and duration of cemetery areas, notable increases in population size and density are posited.

Within the limits of the study area, few Archaic sites from any of the previously noted subdivisions have been fully explored. As well, Archaic occupation or utilization of the lowland floodplain, the topographic-ecological context that comprises the bulk of the study area, seems, from review of the extant literature and archival data, conspicuously absent. Thus, the following summaries of these divisions draw information from the surrounding region with the full understanding that the data may be totally inappropriate for the lowland floodplain.

Early Archaic:

There is growing evidence that Late PaleoIndian and Early Archaic populations occupied the Upper Mississippi Valley at the same time. Two poorly understood relationships are those of Late PaleoIndian-Archaic transition, if in fact the two populations were genetically related, and the interactive relationships, again, if any, manifest by these contemporaneous peoples. Current models would foster interpretations that the two cultural systems were distinctly different, the former pursuing a highly nomadic hunting lifestyle, while the latter, could, because of the regional inferences, be considered more sedentary. The meager archaeological record of both time periods would tend to support the notion that interaction was quite limited.

Perhaps one of the most dramatic and interesting Early Archaic Period sites in the study region environs is the Bass Quarry site in Southwestern Wisconsin. The site was excavated under the direction of Dr. James B. Stoltman at the University of Wisconsin-Madison and materials from the site are currently undergoing analyses by Jeffery Behm, a doctoral candidate at that institution (personal communication). The Bass Quarry site produced significant numbers of Hardin Barbed projectile points and was brought to the attention of Dr. Stoltman by the discoverer of the site, Harris A. Palmer, retired professor of Geology at the University of Wisconsin-Platteville and long time member of The Wisconsin Archaeological Society. Certainly the analyses of the recovered materials will serve both to document the presence of Early Archaic folk in the study area and will provide substantial information regarding the procurement and modification of local cherts by these same populations. However, while the discovery, excavation, and reporting of an Early Archaic quarry site in the Upper Mississippi Valley is notable, it is not likely to lead to major refinement in our understanding of the adaptive strategies of the people of the Early Archaic period.

Middle Archaic:

Of the more than 1,400 archaeological components noted in various site files, published sources, and collections, only 8 are tentatively identified as Middle Archaic period components. Largely these are based on the incidental discovery of side-notched and stemmed projectile points at sites that manifest later occupations. The identification of Middle Archaic components by investigators working in the study area is strongly influenced by archaeological literature detailing investigations and analyses of Middle Archaic sites along drainage systems tributary to the main stem of the Mississippi River. These comparisons suffer from the fact that many of the sites are rockshelters or small upland campsites (see for example Wittry 1959a, 1959b, Halsey 1974a, 1974b, Freeman 1966, Logan 1976, and Wilford 1954).

Meaningful syntheses of Middle Archaic period archaeology within the limits of the study area are prohibited by the absence of any substantive reports or significant collections of material remains. At the same time, it seems incredible to conclude that Middle Archaic populations would have failed to take advantage of the significant animal and vegetal resources of the lowland floodplain. Beds of freshwater mussels, concentrations of waterfowl during the spring and fall migrations, significant populations of aquatic and non-aquatic mammals, spawning fish, and a myriad of aquatic plants and mast crops at higher elevations all seem tailor-made for exploitation by people with broad spectrum economies. Why is the evidence of a Middle Archaic presence so limited? With their readily identifiable stone tools--those most durable material remains--one would anticipate little difficulty in defining significant occupation and utilization of the area by Middle Archaic populations, yet the data are scanty. One obvious set of alternatives is apparent. Either the Middle Archaic remains lie buried beneath recent sediments, or lowland floodplain topographic features are too recent to harbor such occupations. Perhaps the landforms of the floodplain that would have provided the living surfaces of earlier occupancy have already been reworked and thus obliterated the evidence. Again, analyses including the establishment of landform chronology are critical for providing the answers to these and other questions.

Extensive survey work in Pool 10 (Stoltman and Theler 1980, Stoltman 1978, 1979a, 1982, and Boszhardt 1982) yielded little data that would serve to explicate the nature of Middle Archaic occupations in that area. Somewhat to the south, investigations of the lowland floodplain in Pool 12 (Boszhardt and Overstreet 1981) did not recover any material remains assignable to Archaic period contexts. The disturbing possibility that we may never have substantial information regarding this era from the lowland floodplain setting provides little comfort. We can add little to Logan's assessment:

What few definite traces of Archaic occupation are known occur on the larger river terraces, as at Prairie du Chien, Lansing, and the Osceola Site at Potosi, Wis., (Ritzenthaler and Scholz, 1946, pp. 53-70). The scattered Early Man points noted were all found on the uplands near McGregor, Waukon, and Bluffton (1976: 181).

More recent investigations throughout the study area have not prompted radical modification of this assessment.

Another hypothesis that needs consideration, although possibly more apropos for the northern limits of the study area than the southern is stated by Mason (1981). Mason cites good reasons for not differentiating between Early and Middle Archaic periods in the Great Lakes region, but notes that as one moves to the south, the distinctions become warranted.

Restating the "underpopulation" and rarity of Early (and Middle in most frequently applied nomenclature) sites noted by Ritchie and Fitting for New York and Michigan respectively, Mason formulates the Ritchie-Fitting hypothesis to examine this phenomenon. He notes:

Nevertheless, great tracts of Great Lakes territory in Wisconsin, Michigan, New York, and Ontario were not directly affected by even these massive lake-level fluctuations, and satisfactory explanation for the rarity if not absence, of Early Archaic traces must involve other considerations. An attractive path of inquiry, named after the two archaeologists most responsible for pointing it out, is the Ritchie-Fitting Hypothesis. This is based on a generalized model of post-glacial vegetation succession extrapolated from a number of pollen studies of bog and other sediments from Minnesota to New England. These paleobotanical records are incomplete, are clustered in some areas and absent in others, and are subject to differing interpretations among experts. But certain broad trends seem well established. According to this model, the interval 8000-6500 B.C. was predominantly one of edible plant and game-poor, closed coniferous forests in much of the Great Lakes and the Northeast. After about 6500 B.C. there was a slow but accelerating eclipse of the conifer climax as ever more numbers of species of deciduous trees invaded from the south, introducing varieties of nut-bearing trees and increasing populations of deer, bear, raccoon, turkey, and other game. An essentially modern environment was attained about 3500 B.C., more or less coincident with which the Late Archaic period is ushered in accompanied by an obvious increase in the number and productivity of archaeological sites. The Ritchie-Fitting Hypothesis relates the rise in site frequencies and the changing cultural patterns reflected at those sites to the changes in the environment. If the hypothesis is correct, there ought to be a slow but accelerating increase in archaeological site frequencies beginning about 6500 B.C. (1981: 133).

Following the statement of the hypothesis, Mason notes several bases on which it might be rejected.

Evidence of such development is slight, however. The proliferation of Late Archaic sites following 3500 B.C. resembles a rapid upsurge rather than the culmination of a steadily steepening curve. Also out of joint with the poor carrying-capacity

model for the initial part of the period are the results of some regional studies, such as in western New York, which suggest that the environment was not everywhere as impoverished as assumed in the hypothesis. Especially along the southern approaches to the lakes there was more of a mosaic pattern to vegetational change than has usually been pictured (1981: 132-133).

More refined paleo-environmental reconstructions are needed for the Upper Mississippi Valley before these models can be adequately tested. However, if the portrayal is an accurate one, we would expect higher frequencies of Early and Middle Archaic sites in the southernmost navigation pools. Of additional importance is the reconstruction of the main stem of the Mississippi River in response to fluctuating lake levels and the establishment of post-glacial drainage systems.

Late Archaic:

Approximations of significant increases in populations and, hence, greater site densities and increases in site size, during Late Archaic times from many regions of the Eastern United States are common in the archaeological literature. This pattern is also demonstrated for navigation pools 1-10. Tabulations of identified Late Archaic components for the study area demonstrate a substantial increase. From the meager tally of eight components assignable to Middle Archaic times, Late Archaic period components number 18. The validity and utility of these frequencies cannot be considered as reliable, rather, they are a simple reflection of extant data. However, that Late Archaic occupations are better understood and better documented would, I believe, be a generally acceptable statement for the Pool 1-10 region.

Unfortunately, few of the Late Archaic components have produced information indicative of the mundane aspects of the region's Late Archaic inhabitants. The best reported information, as one would expect, is derived from mortuary data. The elaborate burial practices that serve as one of the major definitive characteristics of Late Archaic cultures have been identified at a number of sites in the study area. One well known site is the Osceola Site near Potosi in Grant County, Wisconsin. First reported by Ritzen-thaler and Scholz in 1946, the Osceola Site represents a Late Archaic cemetery that was utilized for a lengthy period. The application of red ocher, copper implements, and large side-notched projectile points (Osceola points) in mortuary contexts are all consistent with Late Archaic burial behavior.

The Voight Site (21-Wn-15) excavated by Johnson and Evans (Evans, n.d.) under the auspices of the Minnesota highway salvage program yielded burials in association with red ocher (although typical "exotic" artifacts were lacking) and is considered a Late Archaic mortuary site. Similar to the Voight Site, Freeman's excavations at the Price Site in Richland County, Wisconsin yielded burials in association with red ocher, yet, again, the rather flamboyant grave furniture one expects from such contexts were absent. Nonetheless, the author suggests a Late Archaic assignment for the site (Freeman 1966).

Somewhat less well defined mortuary contexts that occur with utilization of red ocher and exotic grave goods are reported by Logan (1976). Logan summarizes the excavation of mounds excavated by Orr and Keyes, and two by Beaubien, Sny-Magill Mound and Knight Mound at Prairie du Chien (1953). While there is a strong tendency to associate these burials with Early Woodland cultures, review of the Orr/Keyes profiles is not convincing. Some of the burials, based on artifact associations are likely of Late Archaic origin. Other may be later in time, and, in fact, may be the product of Early Woodland populations.

Habitation sites that would allow for reconstruction of settlement and subsistence practices in the study area have not been excavated and reported. As with earlier Archaic manifestations, reconstructions of Late Archaic adaptive strategies are drawn from rockshelter occupations or sites located on streams and tributaries away from the main stem of the Mississippi River and the lowland floodplain. Until such time as Late Archaic period habitation sites are located and excavated and the recovered data subjected to analyses, we will have to be content with subsistence and settlement models derived from sites outside the project area. The same can be said of reconstructions of social systems, based primarily on data from mortuary sites from surrounding regions.

An interesting problem that can be addressed from the specific project environs is the chronology of the so-called Red Ocher culture, in reality a series of related burial complexes and not a culture. The association of the Red Ocher burial complex has been indicated with both Late Archaic and for Early Woodland cultures (see for example Logan 1976, Benn 1979, Munson 1982, Ritzenthaler & Quimby 1962). Carefully controlled excavations and adequate reporting of additional examples would be a welcome addition to the archaeological record and would perhaps clarify the transition from those cultures we recognize as Late Archaic to those identified as Early Woodland.

WOODLAND PERIODS

Traditionally, the hallmark of Woodland occupations, as contrasted with earlier Late Archaic components in the Upper Mississippi Valley has been identified as the occurrence of ceramics. Lifeways, as least in the incipient stages of Woodland development seem to have differed little from the Late Archaic. Later in the Woodland continuum, corn horticulture, along with the use of other cultigens, appears and stimulates population growth and stability. However, both the time of the initial appearance of maize, and its dietary significance are not agreed upon. Another horizon marker of Woodland cultures is the construction of earthen tumuli, in earlier portions of the continuum as mortuary structures, and, during later times, i.e., Effigy mounds, perhaps for additional purposes.

Woodland period sites, far outnumber sites and components from earlier periods, and existing records are certainly biased in favor of mounds and mound groups as compared with habitation sites. Six hundred seventeen Woodland components are identified within the St. Anthonys Falls-Guttenberg reach of the Upper Mississippi River Valley. Of these, 413 are characterized as mounds or mound groups. Significant numbers of components have been adequately identified so that distinctions can readily be made regarding Woodland occupations. Aspects of material culture, radiocarbon chronology, site settings and configurations, and reconstructions of subsistence and other behaviors have fostered the classification of investigated sites within the three major subdivisions of the Woodland continuum: Early, Middle, and Late. Again, classical examples of Early, Middle, and Late Woodland occupations present few interpretive difficulties. However, the relationships and transitions between these subdivisions are less clear. These limitations, however, seem not to prohibit classification of many components within the study area in each of the three major categories. Nomenclature from one state to the next is not always consistent, however, and it is difficult to correlate the various phases, complexes, and foci from one region to the next.

In the most general sense, the traditional divisions of the Woodland cultures are based on absolute time on the one hand, and various material aspects on the other. Oerichbauer's recent work at Prairie du Chien seems a reasonable point of departure (1976). Based on data derived primarily from southwestern Wisconsin, he suggests temporal limits for Woodland occupations from 1,000 B.C. to A.D. 1634. Early Woodland is identified as spanning the years 1,000 B.C. to 200 B.C., Middle Woodland persists from approximately 200 B.C. to A.D. 400, and Late Woodland begins circa A.D. 400 and is truncated in 1634 by the historic period. Certainly, and with good reasons, prehistorians working in the Upper Mississippi Valley would differ regarding these broad estimates. Their inclusion here is meant only to provide a loose

chronological framework. General characteristics are provided from each of these subdivisions in the following discussion.

Early Woodland:

Two elements of material culture have been applied more than any others to identify Early Woodland occupations in the study area. The discovery of either of two ceramic styles has traditionally resulted in an Early Woodland designation: incised over cordmarked pottery and/or thick-walled vessels with interior cordmarking. To most archaeologists, the type names Black Sand Incised and Marion Thick have become traditional nomenclature (e.g., Dane Incised, Brock Lake Incised, Fox Lake Incised, and Spring Hollow Incised for incised over cordmarked ceramic styles. Various names have also been applied to thick, often coiled, vessels thought to represent Early Woodland authorship, (e.g., La Moille Thick).

Sample sizes of these two ceramic styles are often so small, and the tradition of classifying such remains as early in the Woodland continuum so persistent, it has only been quite recently that prehistorians have begun to question the unequivocal assignment of incised over cordmarked ceramics to the Early Woodland (see for example: Anfinson 1977; Van Dyke, Overstreet, and Theler 1980; Stoltman, Theler, and Boszhardt 1981; and Munson 1982).

Documented Early Woodland sites along the St. Anthony Falls-Guttenberg reach of the Mississippi River are few. Significant exceptions include the Larson Plant Floodplain Site (21 Wa 24) and the Schilling Site (21 Wa 1), investigated by Johnson in 1958 (Birk 1973). Of additional interest is the brief report of Hudak and Johnson that describes the La Moille Thick vessel from the La Moille rockshelter (1975). (For additional discussion regarding the distribution of La Moille Thick, readers are referred to Anfinson, Ed., 1979: 115-117).

During the 1950's, Logan defined the Ryan Focus based on his extensive work in the southern portions of the study area, particularly northeast Iowa and southwestern Wisconsin (1959: 277). Based primarily on the occurrence of Marion Thick ceramics and the utilization of red ocher in mound interments, Logan admitted that his definition was hindered by limited data. The limitations of data that would foster better understanding of Early Woodland developments throughout the study area are significant. Benn's redefinition of the Ryan 'Focus' as the Ryan 'Complex', has relevance throughout the region.

The Ryan Focus was named by Logan (1959: 277) for the Early Woodland manifestation. As Logan admitted, the evidence for this manifestation is scanty, and I do

not feel justified in modifying "focus" to "phase," as will be done for later manifestations discussed here. Rather, the ubiquitous term "complex" will be used. My justification is that since 1959 relatively little new evidence of Early Woodland culture has been revealed to either support or refute the original Ryan Focus concept.

The Ryan Complex is recognized from finds of incised-over-cordmarked pottery similar to the Illinois type Black Sand Incised, and of other finds of Marion Thick in village sites. Additionally, several conical burial mounds, notably mounds in the Ryan group (Orr n.d., 5: 89) and mound 43 in the Sny Magill group (Beaubien 1953a) contained submound floors covered with red ocher which were thought to be related to the Red Ocher Phase in the Illinois Valley (cf. Griffin et al, 1970). Unfortunately, no Early Woodland single component habitation has been found in northeast Iowa. Another difficulty in defining this complex is that artifactual remains were very scarce in the excavated mounds, and two of the Ryan mounds and mound 43 at Sny Magill also contained Lane Farm cord impressed and stamped vessels (1979: 51-52).

His comments regarding difficulties in the northeast Iowa locality seem relevant to the entire study area:

Why is the Early Woodland culture phase difficult to define in northeast Iowa? The reasons appear to confront us in multiples of interrelated factors. There is the question of the precise typological definition of incised-over-cordmarked pottery, since Logan's type, Spring Hollow Incised (1959: 144), was placed in the Middle Woodland time period. Another problem is that the other Early Woodland pottery type Marion Thick, is extremely rare and always poorly preserved in Iowa sites. A third problem has been alluded to, that is, we have yet to locate either a pure Early Woodland habitation or a mound containing grave goods. Such sites may exist, and, indeed, have already been excavated (presumably by Orr n.d.). However, the overwhelming majority of excavations were conducted by the Iowa Archaeological Survey prior to 1950 when the technical knowledge of stratigraphic excavation was yet to be refined up to present-day standards. It would seem, therefore, that much useful information was lost in the field excavations or is buried once again in laboratory collections (Benn 1979: 52-53).

Finally, Benn's reconstruction of the nature of Early Woodland presence in the Upper Mississippi Valley from the perspective of northeast Iowa seems appropriate for much of the region:

It is a matter of speculation that Early Woodland populations were relatively low in comparison to the subsequent period of Havana culture. This is inferred from the usually scant collections of Early Woodland pottery which always comprise a fraction of a percentage in large ceramic collections from habitation areas. It is also possible that the transition from Archaic to Early Woodland occurred only shortly before the advent of the Havana Tradition in northeast Iowa, and the paucity of evidence may be attributed to the brief existence of Early Woodland culture. Still another factor which contributes to the obscurity of Early Woodland culture is that subsequent Havana, Allamakee, and Effigy Mounds cultures deposited such a large quantity of remains that this earliest Woodland complex was literally buried or so diffused throughout mixed deposits that it is virtually invisible. This last statement, however, assumes that Woodland cultures for the most part occupied many of the same living sites and utilized the same landforms for mound constructions. There is evidence that this assumption is at least partially correct (1979: 53).

In summary, throughout the Pool 1-10 reach of the Upper Mississippi River, information with regard to chronology, settlement, subsistence, mortuary behavior, and social structure is quite meager or equivocal. Thus, any single component Early Woodland site, or a site with a substantial or well isolated Early Woodland occupation is of critical interest. Until such time as a site or component of this type is thoroughly investigated we will have to be satisfied with the current interpretive frameworks, (e.g. Boszhardt 1932). Any substantial Early Woodland occupation is worthy of special attention if for no other reason than the relative scarcity of such sites.

Middle Woodland:

Early investigations of Middle Woodland sites, particularly mounds and mound groups, yielded interpretations that, to varying degrees, attempted to "measure" the influence from more classical Hopewell neighbors situated to the south of the immediate project area. Examples of this include the reports by McKern (1931), Bennett (1945), and Cooper (1933). Somewhat later, Baerreis (1949) appropriately noted that regional variations were likely of equal or greater import than "central basin" influences. Recent investigations have resulted in the definition of a significant number of Middle Woodland phases with emphases placed not necessarily on degrees of relationship with the ever-present specter of

Hopewell, but rather on the localized flavor of both material remains and posited adaptive strategies. As well, significant refinement of culture history within the Middle Woodland period has fostered better understanding both with respect to participation in the pan-regional burial cult behavior and local developmental sequences. Some of these are briefly summarized in the ensuing narrative.

Prairie Phase:

Provisionally defined by Stoltman, Theler, and Boszhardt (1981), this temporal unit represents a useful tool in understanding Early-Middle Woodland transition. The phase is represented by incised and fingernail impressed ceramics, with the decoration usually although not always applied over a cordmarked surface. Projectile points associated with Prairie Phase, occupation are contracting stemmed types. The Prairie Phase, at this point is known from southwestern Wisconsin, and, to lesser degree, from northeast Iowa. It overlaps in time with the late Ryan Complex as defined by Logan (1959) and Benn (1981). Of additional interest is the recent summary by Munson (1982) indicating that the incised-over-cordmarked style may be viewed as a northern development rather than as one originating in the Illinois River Valley.

McGregor/Trempealeau Phase:

Benn (1979) applies the term McGregor Phase (originally defined as the Trempealeau Focus by McKern 1931a), while Stoltman has defined the Trempealeau Phase (1979) for the northeast Iowa and southwest Wisconsin localities. Of the McGregor Phase, Benn notes:

The McGregor Phase (Logan 1959: 286) has been named for the local manifestation of the Havana Tradition in northeast Iowa. That the McGregor Phase (ca. 0 AD/BC to AD 300) belongs within the Havana Tradition has been demonstrated in a detailed ceramic analysis (Benn 1978), the essence of which can only be summarized here. McGregor Havana Ware pottery incorporates most of the Illinois types as defined by Griffin (1952) and described by Loy (1968), except that the curved-dentate stamped types are relatively uncommon in Iowa. Hopewell Ware is also very rare in Iowa. The Naples Dentate Stamped type comprises the majority of decorated sherds in most collections. Other common Illinois Havana traits, such as projectile point forms and the characteristically large habitation areas in the Mississippi River Valley are also present in northeast Iowa (1979: 56).

In contrasting McGregor with Havana, Benn suggests that in spite of a somewhat impoverished inventory of elaborate mortuary goods, behavioral similarities are strong. "In general, throughout the Hopewell experience the emphasis seems to have been on carrying out ritual obligations and performances which reinforced ideological and supernatural

beliefs (1979: 56)." Thus, if McGregor folk are considered impoverished, it is in material rather than in spiritual arenas.

Stoltman's time estimates for the Trempealeau Phase vary slightly from Benn's chronology, assigning it to approximately 100 B.C. to A.D. 400. Stoltman characterizes the Trempealeau Phase as a period during which Hopewell influences are relatively strong (1979). Additional descriptive data that would tend to support Stoltman's Trempealeau Phase construct are found in Gallagher et al (1981) and Braun, Griffin, and Titterington (1982).

Sorg/Howard Lake Phases:

In Minnesota two phases have been defined that in part are markers of Havana Tradition influences (Anfinson 1979: 15). However, it is not clear as to what the definitive characteristics are from published accounts. Anfinson notes:

In central Minnesota, the introduction of ceramics appears to be associated with the Havana Complex, an early Middle Woodland ceramic style found throughout the Midwest. Malmo/Kern ceramics show some relationships to Havana pottery, although the Havana influence has been significantly diffused. Since the Early (pre-Hopewell) Havana phase did not begin until about 400 B.C., it is likely that the Malmo/Kern began somewhat later than this. The HOWARD LAKE and SORG ceramics in east central and southeastern Minnesota are much more Havana-like, although it has not been determined whether they were contemporary with the pre-Hopewell or Hopewell Havana phase. HOWARD LAKE has been found only on the chain of lakes in the eastern St. Croix moraine (eastern Anoka County), while SORG is limited to the lower Mississippi Valley in Minnesota. It is possible that SORG is the earliest of the Havana-like complexes in Minnesota with HOWARD LAKE and Malmo appearing slightly later (1979: 15).

It seems apparent that throughout the region at various localities early Middle Woodland populations were influenced to varying degrees by ideological developments derived from farther south. To what degree these ideologies influenced behaviors other than mortuary is not precisely known. The several phases (some would prefer foci) noted suffer from a lack of published detail regarding settlement and subsistence data. Continued emphasis and excavation, and reporting of habitation sites, are necessary to explicate the regional culture histories. Less important is how early Middle Woodland populations differed from Havana Phase populations in their mortuary practices than in the ways regional adaptive strategies resulted in distinctive life-ways within the study area.

Allamakee/Millville Phases:

Flamboyant and pervasive, the Hopewell mortuary cult with its implications of internal ranking in society and its conspicuous consumption of wealth in the form of exotic items from far flung regions, lost its ideological grip on populations throughout the Upper Mississippi River Valley. This decline of the pan-regional burial behavior and accompanying status symbols marks both the late Middle Woodland period and the development of stronger regional cultural systems. In the northeast Iowa locality the designation Allamakee Phase is applied to prehistoric occupants during the post-Hopewell era (Benn 1979). In southwestern Wisconsin, similar occupations are categorized as belonging to the Millville Phase. Minnesota, perhaps, is on the periphery of these developments and late Middle Woodland culture history is not well documented.

With regard to the northeastern Iowa manifestations Benn states:

The transformation from McGregor Phase to Allamakee phase culture is best documented by ceramics. Linn Ware (Logan 1959: 206), the Allamakee Phase pottery, evidences a substantial departure from Havana Ware and the development of a unique regional style of ceramics (Benn 1978: 215-284).

As well:

Hypothetically, the Allamakee Phase is best described as a culture in transition. As the demographic patterns in the Upper Mississippi Basin changed with the establishment of the Havana-Hopewell, as the overall population probably was increasing, and because the Mississippi floodplain was not enclosed by a meager environment for intensive harvest collecting peoples, there was a shift to increasingly dispersed settlement patterns beginning as early as A.D. 200 (Benn 1979: 60-61).

And finally:

In southeastern Minnesota, where little archaeological investigation has been pursued in recent times, at least one site is known to contain Linn ceramics. The Tudahl rock shelter (Wilford 1955: 132) on the Root River contained rocker stamp and cord decorated sherds, probably Lane Farm Cord Impressed, mixed with and below Oneota material (Benn 1979: 64).

In Wisconsin, Stoltman (1979) has recently defined the late Middle Woodland counterpart of the Allamakee Phase, and, based on the type station, has applied the term Millville Phase. Undoubtedly, the most comprehensive report of a late Middle Woodland manifestation in the study area is provided by Freeman (1969) based on her excavations at the Millville Site. Excavations at the Millville Site encompassed an area of 90 x 110 feet and yielded the remains of 14 domestic structures and an additional 176 features including hearths, burials, and refuse/storage pits (Freeman 1969: 28). Faunal remains from the Millville Site were analyzed and reported by Elizabeth Pillaert (1966) and, along with the interpretation of other evidence, fostered the interpretation that the site was occupied for most if not all of the year.

Thus, the Allamakee/Millville occupations in the study area serve as testimony to the decline of pan-regional participation and a reassertion of local material culture and behavioral patterns. This trend continued and expanded in subsequent Late Woodland times.

Late Woodland-Effigy Mound Tradition:

Throughout the vast majority of the region encompassed by the St. Anthony Falls-Guttenberg segment of the Mississippi River, Late Woodland occupations are classified within the Effigy Mound Tradition (Hurley 1975). Among the prominent aspects of these cultural developments are the construction of low earthen tumuli, often in the form of animals (hence the term Effigy Mound, although it is likely that simple geometric forms far outnumber effigy forms), the development of a distinctive cord-impressed or fabric impressed ceramic ware, and a conceptualized settlement and subsistence pattern that reflects hunting and gathering with, perhaps, limited horticulture. Storck (1972), for example, has characterized Effigy Mound peoples as hunters and gatherers who likely ranged throughout a given territory in small groups during most times of the year with occasional coalescence, likely during times of resource concentration, for necessary ritual and social behavior.

In the northeast Iowa locality, Effigy Mound Tradition components have been placed within the Keyes Phase (Benn 1976). Benn notes:

The Keyes Phase (Benn 1976) presently is the comprehensive designation for the Effigy Mound culture of the Northeast Iowa locality. This phase is one variant of the Effigy Mound Tradition (Baerreis 1966, Hurley 1975) which is found throughout southern Wisconsin and in small adjacent segments of Minnesota and Illinois. The Effigy Mound manifestation of Wisconsin has not been divided into units comparable to the Keyes Phase, although variants have been

proposed prior to the modern era of archaeology (McKern and Ritzenthaler 1949: 39).

Kathio/Clam River Complexes:

Somewhat north of the primary distribution of Effigy Mound Tradition sites, in east-central Minnesota and northwestern Wisconsin, Late Woodland prehistory is only recently beginning to be extensively investigated (see for example Gibbon and Caine 1980). Perhaps the most fully reported excavations are those of McKern at the Clam River Focus sites in northwestern Wisconsin (1963). It should be noted that although the data were collected in the 1930's, they were not reported until 1963. More recently Caine (1969, 1974) has applied new concepts and analytical techniques in an attempt to understand these more northerly Late Woodland manifestations. Why these prehistoric occupants preferred cemetery areas where large mounds were built by mortuary accretions over long periods of time and did not apparently participate in more traditional Effigy Mound practices has yet to be resolved. Perhaps the answers lie in cultural ties to the north rather than the south and simply serve to exemplify the strong regional developments occurring in so many localities during Late Woodland times.

In any event, Late Woodland complexes are those that are often characterized as cultural developments indicating great diversity. Strongly localized elements of material culture, adaptive strategy, and social and ceremonial behavior are likely the rule. Much additional work at habitation sites needs to be accomplished before both the Middle-Late Woodland transition and subsequent Late Woodland florescence are fully comprehended.

MISSISSIPPIAN CULTURES:

By about 900-1000 A.D. prehistoric cultures that appear, based on some aspects of material culture, to be either directly or indirectly influenced by the large and flamboyant Middle Mississippian centers to the south of the project area begin to emerge. Distinctly different than their Late Woodland neighbors, the Mississippian occupants of the region appear to have occupied relatively large, substantial villages, primarily on terrace settings. Rather than manufacturing ceramics with grit as an aplastic and decorating vessels with textile impressions so characteristic of the Late Woodland folk, Mississippians utilized crushed shell for tempering their pots and decorated vessel rims and shoulders with trailed and incised lines. To a greater, but not fully quantified degree, corn horticulture plays a role in subsistence. The origin of these cultures remains a poorly documented and explained phenomenon. As well, terms such as Oneota, Upper Mississippian, and Middle Mississippian seem to mean very different things to prehistorians working with this problem. Some would argue that local origins lie in the great Middle Mississippian centers to the south and, if not positing actual colonists from that

realm, hypothesize influences by ideologies and traits so strong as to overwhelm the nature of local cultures. Others suggest that local populations of the Late Woodland period were transformed, largely through the adoption of Mississippian settlement, subsistence, and material patterns. Still others have suggested the possibility that influences from the south are not as dramatic as they seem on the surface of pottery vessels and that some local populations, early on, acquired the trappings associated with corn horticulture while others preferred to pursue a Woodland lifestyle. Theoretical underpinnings, interpretive frameworks, and analytical emphases all vary, yet one consistent theme is clear, the Mississippian lifestyle was a highly successful one in the Upper Mississippi Valley and for at least part of its duration was contemporaneous with Late Woodland.

Three major 'Mississippian' variants have been recognized in the St. Anthony Falls-Guttenberg study area: (1) Orr Phase; (2) Silvernale Phase; (3) Blue Earth Phase.

The Orr Focus was defined by McKern many years ago based on his investigations in southwestern Wisconsin (1945). Later, based on extensive work in the Upper Iowa River locality, Wedel (1959) (see also Hall 1962) added to the known distribution of the Orr Focus and it became established in the archaeological literature as the Orr Phase.

A pattern of summer agricultural villages and dispersed winter hunting camps has been suggested as the model for subsistence and settlement for Orr Phase populations and the temporal span seems firmly bracketed between A.D. 1400 and historic times. Historic implements have been found in association with Orr Phase ceramics at several sites in the northeast Iowa locality and the direct historical connection with historic Ioway is plausible.

The Silvernale Phase seems much more restricted in distribution, clustering in the Red Wing-Diamond Bluff locality in southeastern Minnesota and southwest Wisconsin respectively. Gibbon (1979) and Hurley (1978) provide the most comprehensive reports relating to the Silvernale Phase. Of particular note regarding this Oneota or Upper (or Middle) Mississippian manifestation are the apparent affinities of its design motif of ceramics with those from the American Bottom, e.g., Ramey Incised and Powell Plain. The Silvernale Phase is earlier than, and perhaps ancestral to, the Orr Phase with radiocarbon chronologies indicating a span from ca. A.D. 1000 to 1200. In spite of much theorizing regarding "Cahokia influence" limited reporting of excavated data make it difficult to assess this posited relationship.

The third Oneota or Upper Mississippian Phase is identified as Blue Earth. Situated in southern Minnesota, Blue Earth Phase sites enjoy an 600 year duration if radiocarbon assays are correct, ranging in time from A.D. 1000-1600 (Anfinson, Ed. 1979: 39). In spite of Gibbon's

attempt to develop historical index types for Blue Earth, ceramic analysis was hindered by data limitations:

It should be re-emphasized that Tables 1 and 2 represent a first approximation at establishing historical-index types. These classes are called taxa here to emphasize their provisional and (probably) transitory nature, and to avoid the confusion that would result from the proliferation of type names through several approximations. Sampling error remains a problem and the taxa must still be tested against new data (1976: 7).

At this point, Blue Earth remains the most puzzling of the Mississippian phases in the study area, however, current research being conducted by Minnesota archaeologists promises to assist in refining Blue Earth culture history and associated problems.

SUMMARY AND CONCLUSIONS:

Significant new data have been compiled since Bennett's 1952 synthesis of the Upper Mississippi Valley. No longer does the misnomer "unglamorous" apply to this region, now known to be a critical hub for both the transmission of ideas and the movement of prehistoric populations. Climatic and vegetational changes have become much better understood, and, the methods utilized by prehistoric inhabitants to adjust to these changes and forge new cultural patterns and systems is now beginning to be unraveled.

Information on the earliest eras of man's occupation in the study region is quite limited. Whether this is a function of population densities, adaptive strategy, or changes in landforms has yet to be adequately explained. Later in time, during the Woodland era, for example, prehistorians are confronted with masses of information that literally stagger the mind's ability to interpret and comprehend. Major gaps and serious limitations have been identified--the resolution of the many questions noted seem within our grasp. Archaeologists in Minnesota, Iowa, and Wisconsin are currently confronting many of the problems stated in this brief discussion. The most productive arena from which significant observations can be drawn is the lowland floodplain of the Mississippi River--the topographic setting that comprises the vast majority of the current study area.

Finally, it has been made clear that at least some of the prehistoric inhabitants of the region who are known from the archaeological record made safe passage across the boundary of historic times. Others seem to lie lost in the murky depths of prehistory, their histories confusingly truncated. Perhaps some of these groups chose to move west, others were certainly assimilated into other cultural groups. Still others were doubtless devastated by both the economic systems and

diseases introduced long before local residents ever had first hand relationship with whites. Fortunately, with the advent of Europeans, we begin to get first hand (although not necessarily true and objective) accounts of the study region's residents. The subsequent chapter detailing the ethnohistory of the St. Anthony Falls-Guttenberg study area provides a summary of these accounts.

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UPPER MISSISSIPPI VALLEY ETHNOHISTORY

The Mississippi River between Guttenberg, Iowa, and St. Anthony's Falls in Minnesota has had a complex history since its earliest appearance in the written records left by French explorers and missionaries. Knowing this history requires a two-pronged approach to the data, one archaeological and the other documentary, and both must eventually be brought to bear on the problems posed by the events associated with European contact. The first question to be asked concerns a cultural base line: who were the people originally residing in the area when Europeans arrived? This much has to be determined with some confidence before subsequent history can even be entertained, much less outlined. The second problem to be considered involves the events that occurred after the initial French contact but before the period of actual land cessions and the displacement of native peoples.

In both of these concerns, the role of archaeology is potentially of major help in the analysis. The archaeological link between the final prehistoric past of an area and its more recent historic record is established by locating sites pertaining clearly to each period and then filling the gaps in between with intermediate or transitional material. As yet, archaeological and documentary data of the appropriate kinds have not been found for the study area, and producing a convincing profile of the ties between historic and prehistoric peoples is of the highest priority in any future field and library research. A further problem that can be addressed only with pertinent archaeological material is that of cultural continuity. Often the prehistoric world is treated as itself a slowly changing, almost static universe, but the dynamics of culture change, resource depletion, and environmental shift make clear that prehistory was nothing of the kind. And there should be no automatic expectation of continuity between historic and prehistoric peoples in the same area unless documentation in the form of archaeological confirmation can be provided. Only by controlling the archaeological evidence can the people living within a given area be identified as long-term natives of that area; without archaeological underpinnings, they may have arrived only a historical yesterday after displacing other, earlier people.

The historical framework that helps to explain events on the Mississippi River just prior to and during the early years of French contact includes people and events far beyond its banks. The settlement of French Canada, resting as it did on a mercantile and military base, could not expand easily into the Great Lakes and beyond because of already existing and incipient political arrangements among the native peoples. Far from being simply swept away by superior European firepower, American Indians were active, energetic manipulators of a situation in which their

own best interests were foremost. Eager to exploit the advantages of French trade and the weight of French forces in local balances of power, they nonetheless cannily restricted French access to the hinterlands and prevented the French from reaching interior peoples for direct trade. Before the 1640's, the only information to come to Quebec about the land along "the great river" or about that river itself came indirectly through Indian sources or from infrequent European witnesses such as Nicolet, who heard about it in 1632-1633 (Kellogg 1925:81). Already by that time, however, pressure from eastern Indians upon more westward peoples was causing a shift in population and changes in the spheres of influence of native groups. Chief among these eastern Indians were the Iroquois, whose access to furs was blocked by the Hurons, the same people who prevented easy French movement into the Upper Great Lakes. The Iroquois wars against the Hurons (Trigger 1976) were unprecedented in the military records of the time since they not only destroyed or scattered the Huron nation but also eliminated the Petun, Neutral, Erie, and Susquehannock as significant political forces in the northeast. Fear of the Iroquois led many of the Great Lakes Indians to move westward into what is now Illinois and Wisconsin toward the Mississippi River and even in a few cases beyond it. The history of the Upper Mississippi must be seen first in the context of the protohistoric and earliest historic peoples and then in the period following the defeat of the Huron and the subsequent impact of refugees on the area. A major problem is simply determining who went where at what time.

As soon as the way was open, French traders (legal and illegal), explorers, and missionaries made their way westward. It is from these people that the ethnohistorical data on the inhabitants of the Upper Mississippi come in the earliest period, and the records are often spotty, confusing, and capable of more than one interpretation. A major aspect of future research within the study area should involve assessing the impact of traders, missionaries, and explorers (certainly not mutually exclusive categories) upon the lifeways of the native peoples. This has been done in a general way in other places, but there are specific questions to be answered that transcend the sweeping perception of catastrophic culture change. For example, detailed demographic changes have yet to be documented for the region, and the role of European trade in shifting patterns of land and resource exploitation needs to be addressed in more sophisticated terms than has been done. Even the problem of biological change as Europeans and Indians produced a metis population and the role of those people in local life need to be examined. The kind of cultural accommodation made to new things is a necessary part of any culture contact situation, but the order of acceptance of new things by the people and the degree of understanding of concepts such as religious ideas needs scholarly attention. And then, of course, the direction of culture change is often seen as going only one way; what happened to the culture of French traders, explorers, and missionaries as they interacted with new and different ways of life is an equally complex and important issue in the study of culture contact and change in its broadest aspects.

The major sources on the early inhabitants of the Upper Mississippi Valley include all the available French reports from as early as the 1640 Jesuit Relations mention of the Sioux (as "Naduesiu"). Such people as Nicolet, Perrot, Hennipen, La Salle, Le Sueur, Radisson, and DuLuth provide valuable textual information while maps of contemporary or near-contemporary cartographers serve as an added support to the written records. As helpful, of course, and indispensable to a solid interpretation would be archaeological identifications of all the named tribal groups within the study area. While available for some, for the most part the archaeological progenitors are at present unknown. During the period following the early French regime on the Upper Mississippi, there are explorers', traders', and travelers' reports testifying to the location of Indian groups: Pike, Long, Carver, Pond, and Forsyth. And as the nineteenth century moves into the period of Indian land cessions, an increasingly helpful number of official governmental records and maps attest to the locations of Indian villages.

HISTORIC INHABITANTS: THE EASTERN DAKOTA

The earliest known written record of recognizable named Indian people in the general area of the Upper Mississippi River is the 1642 mention of the "Naduesiu" living eighteen days west of Sault Ste. Marie (Thwaites 1896-1901, 23:225). This name, an older form of what is now written as "Sioux", occurs in a variety of spellings and may refer to a much broader grouping than the Mississippi River area Dakota, who are sometimes known as Santee or Eastern Dakota and sometimes also as the Wahpeton. "Nadessioux" seems to be a common version used in the seventeenth century for the people who will be referred to here as the Eastern Dakota, and they appear with increasing frequency in the reports sent back to France as European knowledge encompassed ever more remote regions.

Before considering their position with regard to the Mississippi River and the specific locations of their villages on the river and on its tributaries, it is useful to point out that the Eastern Dakota did not constitute a single strong tribe with a tribal organization involving representatives from its constituent parts or even pantribal sodality structures. The rule for them was village autonomy with only local chiefs and an emphasis upon establishing alliances with other villages as necessity directed or traditional friendships required: the villages of 200 to 300 people were not unified into an identifiable tribe that spoke with one voice. Exactly how the villages related to one another, achieved temporary common purposes, or were linked together for war and trade are problems for further research.

How the Eastern Dakota used the land and its resources contrasts strongly with the lifeways of those other Dakota, the bison hunters of the Plains. The Eastern Dakota when they were first described by Europeans were hunters and gatherers who exploited riverine environments in many ways. They evidently did not practice horticulture at all but gathered wild rice along the

rivers and in the lakes. Their hunting involved not only animals still familiar in the present in the same area but also bison, which at that time were found on both sides of the Mississippi or were sought out on westward trips across the river. The pattern of Eastern Dakota life involved more or less permanent villages with a scattering into the forests and along the rivers in smaller family groups or associated family groups whenever natural products were to be harvested or hunted. Thus the use of the Mississippi River Valley varied both seasonally and temporally as the extractive needs of the people varied and as the demands of the fur trade came to dictate. Apparently many Dakota began to shift to fur hunting under the dual stimulus of traders' exhortations and their own needs for trade goods. The general movement of the Dakota seems to have been to the rivers during the summer with winter hunting wherever fur-bearing animals were to be found. Even by 1834 this pattern of alternating village residence still persisted (Pond 1908: 342). Future research on these Dakota should emphasize problems in ecological adaptations and the effects on site distribution of the introduction of improved hunting methods and eventually of horses as well. There clearly was a shift among the Dakota and other river peoples to take more advantage of bison as an important food source, and this involved a movement westward that for the Eastern Dakota was only seasonal. The impact of this shift on social structure and the emergence of different forms of organization has yet to be assessed.

Before the more specific reference in 1642, the Jesuits recorded in 1640 the presence of the "Naduesi:" in the "neighborhood of the Winnebago," the kind of hearsay evidence (Thwaites 1896-1901: 18:231) which does nothing to establish the Dakota in the Upper Mississippi River area in the earliest period of French observation. By 1656 Nicholas Perrot (Blair 1911, I: 157), the early French trader and administrator, remarked on the "Scioux," a people of the area somewhere north of the "Ouisconching" and the Upper Iowa River, whose hunters were then on the Mississippi River. He mentioned their land as being a place of lakes and marshes, fifty leagues square and southwest of the St. Croix River. At this time the Dakota were not possessed of European arms or metal tools, and their efforts were directed at securing a safe and reliable source for trade. The Dakota through the eyes of Perrot were hunters and wild rice gatherers, dependent upon canoes, and with a fairly large population. That they also engaged in warfare with many different people was also his observation. By 1660 the French trader Radisson was on his way to the Mississippi River "Scioux," but his account is sufficiently confused as to defy interpretation (Adams 1961), and where he encountered then is unknown. Other Frenchmen moved down the Mississippi from the north, portaging across from the settlement at Chequamegon; and in 1665-1666 the calumet was sung for some of them in Eastern Dakota villages (Blair 1911, I:182). The calumet pipe and its attendant rituals were an important part of life along the river not just among the Dakota but also among other Indians as well, and it came to be used by the French in their attempts to establish local alliances.

Exactly where the Dakota villages were in this first phase of French contact fits well with what is known of their patterns of land use: permanent villages in riverine locations with the broad length of the Mississippi as a major zone for hunting, wild rice gathering, and summer residence. Which particular rivers served as original sites of Dakota village settlement is not always clear. La Salle put the "Nadouesioux" directly west of Lake Superior when first contacted (Hennepin 1966: 366), and at times in this early period villages seem to have been sometimes on the Minnesota (then the St. Peter) or on the Cannon or elsewhere. The influential Franquelin Map of 1688 (Kellogg 1925: frontispiece) has them gathered completely around Lac de Baude to the northwest of Lake Superior. It should be emphasized that "permanent" villages were not permanent in the ordinary sense; they, too, shifted as resources declined or as opportunities opened up. The extent to which the Dakota moved about to take advantage of their opportunities has yet to be determined.

The voyage of Marquette and Joliet from the Fox River to the Wisconsin and then to the Mississippi adds a curious counterpoint to Perrot's early comments about the "Scioux." As Father Marquette described his historic voyage: "We happily paddled into the Mississippi, the 17 June (1673) with a joy which I am unable to express" (Hamilton 1970: 134), and he throughout found entirely "uninhabited" lands. There were no signs of human life on the Mississippi River until the party reached "100 leagues" south of the Wisconsin where they met with the Peoria, a people of Illinois (Donnelly 1968: 215). It might be reasonably inferred from Marquette that the Mississippi area, at least the stretch between the Wisconsin River and the Illinois, was vacant land. This was anything but the case: at that time of the year the Dakota as well as other peoples were not yet in place in their summer habitations, and Father Marquette luckily did not meet any of the groups regularly using the Mississippi as a means for making war.

The most detailed account of the Dakota in the early French period comes from the Recollet priest, Louis Hennepin, whose involvement in a three way discussion with La Salle and DuLuth sheds even more light on the Dakota in 1680. In the spring of that year, Hennepin was sent by La Salle to explore the route the whole party was to take to the Mississippi and to feel out possible trade connections. Hennepin's party was captured by the Dakota somewhere on the Mississippi, perhaps near the Des Moines River (Hennepin 1966: 205). The group then were returned up the river by their captors to Dakota villages whose location is not clear from Hennepin's description. He does, however, mention Indians "cabined" along the river, and he describes quantities of bison meat in Indian houses and in the hands of Indian women at the mouth of the "Buffalo River." This river as located by La Salle (Hennepin 1966: 365) was 30 leagues north of the Black River, which was 24 leagues north of the Wisconsin; this ought to put some of the Eastern Dakota on the Mississippi near the mouth of the St. Croix in 1680. Hennepin and his fellow captives were joined by DuLuth, who came from Lake Superior on a rescue mission (his own interpretation) or on a thinly disguised trading

initiative (La Salle's accusation), and he found Sioux cabins only as he arrived on the Mississippi itself; he then traveled 20 leagues south to where Hennepin was held captive in a village of about 1000 souls (Hennepin 1966: 376). All of this activity among the Dakota firmly places them as the major inhabitants of the reaches of the Upper Mississippi at that time.

By 1689 Perrot was sufficiently confident of the location of the land of the "Nadoesioux" as to take possession of it for the French crown. From a French military presence on the Mississippi River north of the Wisconsin, he annexed much of northwestern Wisconsin, including the Mississippi itself, which he specifically mentioned as the "country of the Nadoesioux" (Blair 1911: I: 244). From this point on the Dakota were more and more in contact with the French and specifically with missionaries and traders. By 1689 the Jesuit Joseph Marest was among them (Blair 1911: I: 244), and as early as 1683 the important French trader Le Sueur began his seven year stint on the Upper Mississippi and its environs (Wedel 1974). Le Sueur originally may have come to the Mississippi with DuLuth, and he was a witness to Perrot's ceremony of taking possession of the territory. Although the position of the Dakota shifted, they seem to have had by Le Sueur's time 22 or 23 villages situated on both sides of the Mississippi north of the Minnesota (Wedel 1974: 163), but they claimed the entire Mississippi River at least on the west bank down to the Des Moines River as their traditional hunting territory. Jonathan Carver in 1766 described Dakota territory as beginning at Lake Pepin and going north (Parker 1976: 89), but by that time the Pillager Chippewa were making even Lake Pepin unsafe for the Dakota: their principal villages appear then to have been on the Minnesota. By the end of the eighteenth century, the location of the Dakota villages was still on the Minnesota and along the west bank of the Mississippi River below St. Anthony's Falls and down as far as the Upper Iowa (Hickerson 1970: 75).

The nineteenth century found part of the Eastern Dakota still within this same area. The military explorer Zebulon M. Pike (Jackson 1966) began his voyage up the Mississippi in 1805. His first Dakotas appeared at the Wisconsin River, perhaps near Prairie du Chien, and he stopped at a Mdewkanton Sioux Village on the Upper Iowa where that river joins the Mississippi. Pike described the Dakota as living in various bands, each claiming a sometimes overlapping segment of the Mississippi: the "Gens du Lac" controlled both sides of the Mississippi from the Upper Iowa to 35 miles up the Mississippi; a second group lived near the head of Lake Pepin, hunting northward; a third resided on the Mississippi between the Cannon and the Minnesota, and the fourth seems to have been located on the Minnesota itself (Jackson 1966: 211, 212). The style of life among all these Dakota continued to be the prairie pattern of bison hunting and wild rice gathering that characterized them when Perrot and Hennepin first mentioned them in the French sources. The principal accomplishment of Pike in the Dakota territory was the purchase of an area nine miles square at the mouth of the St. Croix and from the mouth of the Minnesota nine miles up the Mississippi River to St. Anthony's Falls. Part of this tract eventually became the site of

Ft. Snelling (Jackson 1966: 245). Other travelers and explorers continued to find the Dakota on the Mississippi in the first part of the nineteenth century. In 1820 a British trader located them as far south as Prairie du Chien (Babcock 1945: 127-136). By 1834 estimates of Dakota population were nearly 7,000, and by the end of 1834 their principal place of settlement was north of Winona, Minnesota (Babcock 1945: 127).

The remarkable tenacity of the Dakota within the reaches of the Upper Mississippi should not obscure the fact that what went on within that territory was a long struggle by the Dakota to maintain themselves there within an incredibly unstable situation involving many other peoples seeking to use and exploit the same resources. The placid rhythms expressed in so many accounts of bison hunting, fur trading, and wild rice gathering mask a dynamism that is just beginning to be appreciated and certainly is not yet fully understood. For one thing, the Dakota stood as a barrier to the westward movement of all the refugees displaced by events in the eastern part of North America: these people often attempted to oust the Dakota from their territories. Similarly, the Dakota had to withstand more successful pressures from Chippewa in the north as the latter sought to expand their tribal estate at Dakota expense. Indeed, in their own defense, the Dakota were as DuLuth described them in 1680, "generally at war with all kinds of nations" (Hennepin 1966: 374). Much of the energy of European and later American frontier administrators was directed at establishing peace between the Dakota and one or more of their immediate neighbors.

An important dimension in all of the Dakota experience in the Upper Mississippi is the effect of the river itself upon human life. Aside from its nature as the habitat within which human beings lived and worked, the river was a water highway that brought people quickly into and out of the area, and most important, it was a war road that moved groups of belligerents to and from their places of battle. When Hennepin's party was captured by the Dakota, the latter turned back from a proposed war party to take their captives home (Hennepin 1966: 205). Campaigns against the Dakota and by the Dakota equally used the great river as the major means of reaching the foe.

The Eastern Dakota can be regarded as the principal people occupying the Upper Mississippi River when Europeans first entered the area and recorded anything about its inhabitants. How long prior to that period the Dakota first began to live near the river or on its tributaries is a question that must wait on archaeological excavation of historic and prehistoric sites representative of the same people.

HURONS, OTTAWAS, AND THEIR ALLIES

The first historic confrontation between the Dakota and the refugees from the east came in the years immediately following the Huron diaspora from their homeland in what is now Ontario (Blair 1911, I: 157). The destruction of Huronia by the Iroquois occurred in 1649-1652, and by 1653 the Hurons and their friends

the Ottawas and Petuns had fled across the Upper Great Lakes into what is now Wisconsin, evidently along the same route later followed by Marquette and Joliet (R.Mason 1974). On reaching the Mississippi, a year or two later, they turned first south to take refuge with the Ioway, who lived not on the Mississippi at that time but rather on the prairies beyond. This environment apparently did not suit the woodland agricultural Huron/Ottawa/Petun group, and they left their Ioway hosts to travel up the Mississippi, hunting as they went. On this route some of them were captured by the Dakota, whose crying need was to establish some sort of stable trade relations with people who had access to European goods, particularly iron tools and weapons. The Huron/Ottawa/Petun people had themselves no sure supply of European goods at this time and so were unable to establish themselves as middlemen, a role particularly congenial to at least some of them.

Eventually, with Dakota permission, the refugees settled on Prairie Island in the Mississippi River below the St. Croix and opposite what is now Red Wing, Minnesota, an area later an important center for French trade. They did not remain long on the island (called Pelee Island in early accounts) although they built a "fort" there; any archaeological remains left by them must be both scanty and now overlaid by many other occupations. Peace with the Dakota did not last, and they were eventually driven from Prairie Island north to Chequamegon, which served them as a base for years of hostilities against the Dakota. This was the first historic pressure against the Dakota by eastern groups, and it ended badly for the Huron and their allies with a series of defeats punctuated by French attempts to persuade or threaten the contending parties into uneasy peace. By 1672 the repeatedly defeated Huron/Ottawa/Petun alliance no longer represented any problem for the Dakota, who turned their attention northward. In a succession of wars with more northerly peoples, Cree and Assiniboine, the Dakota were themselves defeated and substantially reduced in numbers (Blair 1911, I: 167). This series of wars with people to the north played an important role in making the Dakota less likely to undertake large scale military operations and more likely to be forced to acquiesce in demands put upon them by aggressive neighbors. In particular, they were under pressure from the Chippewa.

In the relations between the Dakota and the earliest refugee bands entering their area, a series of important questions can be raised. For one thing, the exact nature of Dakota organization at the beginning of this sequence of events needs to be determined. How and why warfare occurred among any and all of the actors is worth examination as is the role of the calumet ceremony in establishing ties that did or did not bind the participants together. Finally, the archaeological substantiation of group movements should be of principal concern in future research.

CHIPPEWA

As early as the 1680's, the French were making efforts to establish peace between Eastern Dakota and the Chippewa (Blair 1911, I: 277), and the subsequent histories of both peoples consist of repetitions of eventually fruitless attempts to settle their differences. War between the Eastern Dakota and the Chippewa was part of a long term process of displacement that began as the Chippewa themselves expanded west from Sault Ste. Marie.

The causes for Chippewa expansion into the lands west of the Sault are complex and only partly explained by the general westward movement of native peoples in the historic period. The Chippewa were hunters and gatherers and horticulturalists, dependent upon the presence of a sufficient area of tillable land and a zone more or less adequately supplied with wild game and wild foods. The land north and east of the Sault was in their terms "hunted out" (Wedel 1974: 164), and the beaver-rich woodlands south and west of the lake were apparently open to them. Additionally, the presence of French missionaries and traders at Chequamegon acted as an incentive to move in that direction. At first, the Dakota, whose traditional hunting lands were being infiltrated by Chippewas, had been persuaded by mutually advantageous arrangements to tolerate Chippewa presence there (Blair 1911: 109). The Chippewa at that time acted as middlemen supplying the Dakota with French trade goods, but the peace held only by fits and starts. In 1695, Le Sueur was established on the Mississippi to keep the peace between the Chippewa and the Dakota if he could (Wedel 1974: 160), and it was clearly in the best interests of the French to do so. But by 1736, all pretense of an alliance broke down as the Dakota, weakened by Cree and Assiniboine raids, were perhaps seen by the Chippewa as ready to be pushed from the hunting lands of northern Minnesota and western Wisconsin. The subsequent long wars of the Dakota and Chippewa have been of great interest because of their relationship to woodland ecology, fur supply, and the nature of warfare in general (see Hickerson 1970). Jonathan Carver's testimony in 1766 leaves little doubt but that the pressure on the Dakota was sufficient to be felt in the Dakota heartland: Chippewa were on the Mississippi as far south as the mouth of the Chippewa River, and they were raiding the Lake Pepin area with regularity (Parker 1976: 90, 120). Indeed, fear of the war and the widely ranging war parties kept Carver's Indian guides from going any farther up the Mississippi than the mouth of the Chippewa River.

By the beginning of the nineteenth century, the Chippewa had in fact extended their hunting range into the sources of the Mississippi and were dominant all along its eastern bank at least as far as the Chippewa. Raids by the Dakota continued, however, rendering the eastern bank of the Mississippi River a "debatable zone" (Hickerson 1970: 91). The realignment of the Dakota to meet this continued pressure resulted in location of

their villages along the west bank of the Mississippi between St. Anthony's Falls and the Upper Iowa River. Thus the Mississippi in addition to being a war road to the north and south had become a boundary between obsessively hostile groups, each contending for what had been traditionally the hunting lands of the Eastern Dakota. In 1824-1825, a major effort was made by the United States government to settle for once and for all the Dakota/Chippewa problem. Representatives of both groups were invited to a conference at Prairie du Chien (Meyer 1967: 39) along with any and all Indian peoples of the entire area, and the Upper Mississippi was divided up on surveyed lines among the various claimants. The Chippewa land claims at this meeting indicate clearly how far they had expanded south from the shores of Lake Superior; their claims extended in severalty from the St. Croix to the Black River and included vast sections of hinterland. They were even among the claimants to the valuable lead-mining area along the east side of the Mississippi. The setting of boundaries between the Dakota and the Chippewa was unsuccessful, and warfare continued as each group attempted to establish effective control over the valuable hunting territory. Spectacular outbursts and ferocious encounters continued between the two enemies as the Minnesota Territory was being formed around them. By the 1840's and the period of land cessions, the raids and counterraides continued in spite of the fact that the "debatable lands" were rapidly being lost to still other, newer claimants (Meyer 1967: 105). The Chippewa/Dakota competition ended only when the Dakota were finally ousted from Minnesota in 1862.

MENOMINI

The Menomini, called Folles Avoines by the French, entered known written records in 1634 when Jean Nicolet found them living on Green Bay (Thwaites 1896-1901, 18: 232-233), and throughout much of subsequent history the major focus of their settlement continued to be in north-eastern Wisconsin. However, the same pressures that were pushing other Algonkian speakers westward seem to have resulted in a partial extension of Menomini interests and ties in the west, and they appear along the Mississippi River as participants although not principals in the events of the Chippewa/Dakota wars.

During the eighteenth century hostilities between Chippewa and Dakota, the debatable land contested by them was relatively safe from being hunted out: neither Chippewa nor Dakota could exploit its resources without danger from the other. But the game-rich debatable lands were in fact hunted, mainly owing to the persuasions of traders who sought to harvest the furs in spite of the war. French traders received permission to bring Menomini within the territory to hunt, and these neutral Indians trapped and hunted where the belligerent contestants could not themselves go. Menomini were on the Mississippi in 1786 with traders near the mouth of the Chippewa River (Hickerson 1970: 83); and again Menomini visited trading houses established up the

Chippewa, testifying to their presence as hunters in the lands east of the Mississippi. The Menomini brought by the traders to hunt seem to have been picked up rather casually from among people living at the time on Lake Winnebago well south of the place where Nicolet and other sources first found them.

The Menomini continued to play the role of hunters-by-permission in the eastern Mississippi area, wintering in the forests and using freely such resources as sugar bushes and birchbark. Pike in his 1805 expedition encountered Menomini in a number of places; one group had stayed the winter on the Rum River and was on its way to descend the Mississippi to Prairie du Chien (Jackson 1966: 117). Evidently their habitual presence there came to be regarded as a normal part of their range, and the Folles Avouines, although low in population, received recognition of their interest in the area by receiving an invitation first to visit Washington and then to the 1825 Prairie du Chien conference to establish permanent boundaries between groups. The Menomini in the treaty that resulted from that conference modestly claimed central Wisconsin only to the Black River in the west. If this included the mouth of the Black River, then the Menomini are one of the claimants to the central part of the Upper Mississippi Valley.

Throughout the eighteenth century and the first part of the nineteenth, the Menomini participated in the various wars that involved the Europeans and those that included only Indians. They joined in the French and Indian War, Pontiac's War, the American Revolutionary War, and the War of 1812; and they allied themselves at time with others to fight the Fox, the Illinois, and even the Dakota. It was an attack on some Menomini by the Sauk and Fox near Prairie du Chien in 1832 and their desire for revenge that was a pivotal event in the Black Hawk War (Jackson 1964: 17). The point to be made about the Menomini is that they were a widely ranging people, at least as war parties, and they were conspicuous participants in using the Upper Mississippi as a major war route both north and south.

CENTRAL ALGONKIAN

The Menomini were not the only people to stretch their interests to the banks of the Mississippi River in the years following the extension of French influence into the area. People who came to be called Miami, Kickapoo, Fox, Sauk, Mascouten, and Potawatomi all played significant roles in events in the life of the river. What all these people had in common besides a similar language (forms of Central Algonkian) and a similar culture (R. Mason 1981) was a shared participation in the westward movement put into motion by the Iroquois. The westward movement eventually brought all of them up against the Mississippi River and in some cases even beyond it. Following the historic courses of each of these groups involved many separate problems, some related to origins and others to the relationship of the groups to each other and to their common environment. For some of them a full and detailed history is not yet available although their activities in the

Upper Mississippi region can be briefly outlined. During the years following their movement west, all of these groups moved with great fluidity in both large segments and smaller ones in the area between Lake Michigan and the Mississippi River. At times segments of named peoples combined and recombined in villages with many different ethnic groups represented. When Father Allouez described the mission efforts west of St. Francis Xavier (near present day De Pere), he mentioned villages that included Miami, Illinois, and Kickapoo all living together (Thwaites 1896-1901, 58: 41). Such combined villages were increasingly common in the eighteenth century and may be attributed to what ordinarily happens to peoples uprooted from their original homelands and moved into new territories. There may also be situations, of course, in which new ethnic identities were being forged and certain segments of previously existing groups were achieving new prominence. It was a time of immensely complex interactions among all those people and a time of deeply felt social change.

The Kickapoo seem to have moved into Wisconsin from a homeland west of Lake Erie (Callender 1978b: 656), but other authorities support an original position near the southern tip of Lake Michigan (Silverberg 1957: 161). Wherever they originally were at first French contact, they rapidly became familiar inhabitants of the lands between Lake Michigan and the Mississippi River. By the early 1660's some authorities place them on the Upper Iowa actually across the Mississippi River. By 1665 they were at Chequamegon allied briefly at that time with the Dakota against the Cree and Assiniboiné (Blair 1911, I: 171). Father Allouez on one of his missionary visits among the people of eastern Wisconsin met with Kickapoo who had just come from over the Mississippi River where they seem to have been freely moving (Kellogg 1925: 161). La Salle lists the Kickapoo as one of the people through whom one must pass to reach the land of the Dakota from the south, implying, at least, a position of some Kickapoo on or near the Mississippi (Hennepin 1966: 370-371), and he states that prospective travelers needed to know the Kickapoo language in order to travel on the Mississippi from south to north. By 1685, Perrot referred to the Kickapoo as people of Green Bay (Blair 1911: 245), and he was forced to defend his fort on Lake Pepin (Ft. St. Antoine) from a combined body of Kickapoo, Mascouten, and Fox who sought to plunder it. After the 1680's the Kickapoo were widely dispersed, their movement conditioned by both trade and war as much as by their yearly round of living. They were deeply involved in the fur trade and participated in the Chippewa/Dakota wars, usually against the Dakota, who became their habitual enemies. By 1725 they crossed the Mississippi in a westerly drift although their stay on the western side was apparently very brief (Thwaites 1970: 174). Later in the wars between the French and the Fox, the Kickapoo allied themselves most often with the Fox against the French but not always: in 1730 they reversed their usual alliance and were helping to attack the Fox (Callender 1978b: 662). In Wisconsin the Kickapoos seem to have freely used much of the southern part of the state in the course of their hunting, westward to the Mississippi and south into Illinois, but they do

not appear to have retained any claim to the Upper Mississippi Valley. They were not participants in the 1825 Prairie du Chien conference (Meyer 1967: 39) to divide up the region, and gradually their focus and principal settlements came to be in Illinois well south of the study area.

The Fox Indians, frequent allies of the Kickapoo, were first contacted by Father Allouez when he was at Chequamegon (Thwaites 1896-1901, 51: 42-45); and at that time, Fox settlements were southeast of Lake Superior. The Fox, however, are one of those people whose original homeland is thought to be east of Lake Michigan, perhaps in what is now southeastern Michigan (Wittry 1963), and they were part of the westward displacement of people fleeing the Iroquois (Kellogg 1925: 87). Fox villages were established in eastern Wisconsin, and the Fox sought to develop themselves as middlemen in the trade (Kellogg 1925: 275). The failure of their attempts led to the protracted Fox wars with the French and a long period of Fox-French animosities that resulted in 1750 in the much reduced Fox being driven across the Mississippi River by their enemies. Throughout the nineteenth century the Fox (along with the Kickapoo and Mascouten) were participants in the Chippewa/Dakota wars and sought to attack the latter on any and all occasions (Wedel 1974: 164), and the Mississippi River above the Wisconsin was their principal route for so doing. In 1766 Jonathan Carver visited Fox villages on the Wisconsin and on the Mississippi at Prairie du Chien (Parker 1976: 125), where they were "much reduced" through wars with the French, the Menomini, and, of course, the Dakota as well. At this time the Fox regarded themselves as closely allied with the English interests although they were not above flirting with the Spaniards and even with the French trade sources to the south. By the 1780's, the Fox were as far north as the Chippewa River and the St. Croix River struggling to wrest a piece of the Dakota hunting land for themselves (Hickerson 1970: 81). Future analysis of this area should be aimed at understanding to what extent Fox, Sauk, and others were serious contenders for the Dakota debatable lands and what was going on with regard to the local balances of furs, trade, and native peoples. By the 1790's the Fox were evicted from the area along with the allied Sauk and Winnebago, but they continued raiding both Chippewa and Dakota as opportunities arose. By 1805, Pike on his northern trip up the Mississippi began meeting Fox villages as far south as the mouth of the Rock River and near Dubuque (Jackson 1966: 18). At that time they claimed hunting territory on both sides of the Mississippi from the Des Moines River to the Upper Iowa River (Blair 1911, II: 147), and Prairie du Chien continued to be an important trade center for them.

The Sauk or Saugies were a people closely akin to the Fox and the other Central Algonkian speaking peoples. Like all of them except the Menomini, they seem to have come into Wisconsin after the Iroquois reduction of the Hurons. They were one more in the wave of immigration that settled Wisconsin with Indian refugees. They seem first to have been in the area around Green Bay where they remained into the eighteenth century. Carver

spoke of the land around Green Bay as being "Sauk country" at that time and at least for sixty years previously (Parker 1976: 77). Indeed, he even referred to the Fox River as the "Sacks River." The ties of the Sauk to the Fox led their participation in the Fox wars against the French and eventually a movement out of the Green Bay/Fox River area even more westward. By the end of the eighteenth century, they had moved from the Fox to the Wisconsin and from there to the Mississippi River. Carver noted that the Fox village at Prairie du Chien was actually a village of Fox and Sauk together (p. 187). Evidently once they had reached the Mississippi, the Sauk sought to establish themselves in the north as they joined with Fox and Mascouten to raid both the French and the Dakota. The failure of this northward movement (Hickerson 1970: 83) caused the Sauk to turn south and begin pushing at the Illinois, whose land and trading connections they particularly coveted. As the Chippewa put pressure on the hunting lands of the Dakota, so did the Sauk begin to put pressure on the Illinois. In 1766 Carver pointed out that the Sauk war with the Illinois was advantageous to the English since it effectively prevented the Dakota from using the Mississippi River route to reach French or Spanish sources to the south for trade. "Peace" in Carver's words would deprive the English of "near all the Mississippi trade" (Parker 1976: 84). The successful prosecution of their war with the Illinois moved the Sauk down the Mississippi River, and by the late eighteenth century they were much farther south--on the Mississippi between the Rock and Des Moines Rivers (Callender 1978a: 651). By the nineteenth century the Sauk laid claim to most of the area on the east side of the Mississippi south of the Wisconsin River to the mouth of the Illinois, and they claimed some share in the lead-mining district contained within it (Clifton 1977: 226). The last event in the history of the Sauk that impinges upon the study area is the Black Hawk War, which brought some of them to the Mississippi in the Battle of Bad Axe and Black Hawk himself to surrender at Prairie du Chien (Jackson 1964: 138-140) in 1832.

The Miami formed another of the refugee groups displaced westward during the seventeenth century. Originally ranging across Indiana and northern Illinois, they seem to have occupied the Mississippi Valley only briefly. Joliet's map indicates they -- represented by a subgroup, the Wea -- were on the west bank of the Mississippi south of the Wisconsin River in 1674 (Mott 1938: 268). They seem to have fled with the Illinois across the "great river" somewhat before Joliet found them there, and they did not remain for long. Soon after, they left Iowa to settle in varying locations on the Upper Fox (Kellogg 1925: 99), where they often appear in amalgamated villages of their close linguistic and cultural relatives the Kickapoo and Mascouten. At times the Miami played host to Illinois Indians (Thwaites 1896-1901, 58: 41), and their villages were regularly visited by French explorers, missionaries, and traders. Perrot sought to persuade some of these Wisconsin-dwelling Miami to follow him to the Mississippi River where they could help him defend the Upper Mississippi Valley from the Dakota (Silverberg 1957: 81).

The Miami did indeed become enemies of the Dakota (Callender 1978c: 681), and they frequently used the Mississippi River as a means to reach the Dakota country in company with their allies the Fox, Mascouten, and Kickapoo (Blair 1911, II: 65). During this time, they had villages on the river itself (pp. 66, 77), but at the end of the 1690's the Miami were pushed away east and southeast by the reactions of the Dakota (Wedel 1974: 164), and their Mississippi Valley occupation gradually ended. By the eighteenth century the Miami were living once again in their former lands farther to the east.

Frequently linked with the Kickapoo, the Mascouten appear on the Mississippi River in La Salle's list of rivers flowing into the Mississippi River from the west (Hennepin 1966: 364, 370) and as one of the peoples "on the way to the Dakota country." Like the Kickapoo they were apparently also displaced from an earlier homeland in Michigan and moved into the Upper Mississippi Valley in the seventeenth century. The Mascouten range in this area seems to have concentrated around Prairie du Chien and to have reached southward to Missouri (Goddard 1978: 668), but they appear as active participants in the Dakota wars and in attacks on the French in the more northern reaches of this range (Wedel 1974: 162, 164). At least one village was along the Upper Fox when Perrot came through in 1685 to build a fort on Lake Pepin (Silverberg 1957: 81), and the Mascouten were mentioned as being among those who sought to loot Perrot's stores in order to better equip themselves for fighting the Dakota. Still earlier in 1668 the Mascouten were part of the famous Mascouten/Miami grand village, whose population the Jesuits estimated at 20,000 (Kellogg 1925: 130). Eventually the Mascouten merged with the Kickapoo, and their history became a joint one.

Originally east of Lake Michigan, the Potawatomi came into Wisconsin from the north over the islands at the mouth of Green Bay and into the bay itself (R. Mason 1974). By 1653 they were uneasily gathering with allies to face invading Iroquois whose defeat at their hands gave everyone a breathing space in their new habitat west of the lake (Clifton 1977: 39). Father Allouez met some of the Potawatomi at Chequamegon, and it is through their invitation that the French moved into the area at the foot of Green Bay. During the years that followed, the Potawatomi sought to establish the same kind of middleman relationship in the French trade that the Ottawa had previously maintained. This involved all the Algonkian-speaking peoples who now occupied the Upper Fox, the Wisconsin, and adjoining lands along the Mississippi River. Trading expeditions thus took the Potawatomi into contact not only with the people themselves but also with the quarrels and alliances that governed their interrelationships. Throughout the last part of the seventeenth century and the first half of the eighteenth, the Potawatomi were participants in the Chippewa/Dakota wars, raiding and counterraiding along the Mississippi (Clifton 1977: 70). In 1685 they were actively supporting the French by encouraging Perrot in his construction of trading forts along the Mississippi

(p. 80), and they remained an important factor in French and later British political life there. Their main settlements were in the eastern part of Wisconsin in the beginning, but their tribal estate expanded remarkably until by the nineteenth century it included lands actually along the Mississippi (Clifton 1978: 728). The Mississippi River lands were principally hunting grounds where the Potawatomi were seeking bison as early as 1720, but some of them were sufficiently at home there -- principally in the Prairie du Chien area -- to claim some share in the title to Wisconsin's lead mining area along the Mississippi (Clifton 1977: 228). The Treaty of 1825 at Prairie du Chien recognized Potawatomi claims although almost all the other Indian inhabitants made similar efforts to share in the lead deposits.

The Upper Mississippi Valley in the years following European contact was a place of dynamic cultural interchanges, and the refugee populations of Central Algonkians were principal actors in the events after the fall of the Hurons and the Iroquois-induced westward dispersal of people. Tribes were developing, tribal lands were changing, leadership roles were altering, and former habits were being readjusted to new conditions. Much of the interpretation of these events rests upon an understanding of the relationship of specific groups to each other, to the game supplies or absence thereof, and to Europeans. The ebb and flow of named ethnic groups from one area to the next seems wildly eccentric until control of detail yields to broader patterning. The data from this region have already produced some outstanding studies in ethnohistorical analysis (see Hickerson 1970 and Clifton 1977), and much more can be expected from such a wealth of information.

ILLINOIS

The movement south of people like the Potawatomi or Sauk or Kickapoo was possible only because of concomitant weakness in the once great and powerful Illinois confederacy. The Illinois were settled in lands near the Illinois River and also on the east bank of the Mississippi, and for the most part their use of the river was well south of the study area. But since the entire region following European contact reflected the unstable and fluctuating political geography of the time, it is only to be expected that the Illinois, too, were involved in more northern events. They appeared very early at Chequamegon, and by about 1657 some of them were fleeing across the Mississippi into what is now Iowa to establish a joint village with the Miami (Kellogg 1925: 99). Later they were recorded by Allouez in the woods to the west of St. Francis Xavier living as guests of what were probably the same Miami (Thwaites 1896-1901, 58: 41). In the late seventeenth century they joined with Miami and other Algonkian speaking people in raiding the Dakota using the Mississippi as their war road (Blair 1911, II: 65). The Dakota replied in kind and moved south along the river to harass the Illinois (Wedel 1974: 164). Even well into the eighteenth century the Illinois were listed as enemies of the Dakota

(Parker 1976: 100), but by that time they were also at war with the Sauk (p. 84), Potawatomi (Clifton 1977: 77), Kickapoo, Mascouten, and Fox. The rapid decline in population that followed opened the fertile Illinois country to the expansion of other peoples, most of whom proceeded to claim large sections of the Mississippi River as their homelands.

WINNEBAGO

Although Siouan speakers like the Dakota, the Winnebago were sedentary horticulturalists when first contacted by the French in 1634. Their villages and fields dominated much of the area around Green Bay and, if archaeological identifications of them are correct (Overstreet 1976; C. Mason 1976), a large part of northeastern Wisconsin as well. They were one of the peoples into whose native territories the flood tide of eastern Algonkian speaking refugees intruded after 1650. One of the reasons that those refugees were able to replace the Winnebago was because of a decline in Winnebago population brought about by a combination of warfare and disease (Lurie 1960). The reduced Winnebago villages had no choice but to allow the settlement of others; and much of their former range, once called the "Land of the Puans" (Winnebago) became so identified with those other people as to no longer bear Winnebago names. In the seventeenth century "they evoked scarcely any comment" (Lurie 1960: 802). The effect of others pressing upon them had the effect of moving the Winnebago to the south and to the west, and by the fur trade period they claimed an area bounded on the north by the Black River, on the south by the Wisconsin, and extending to the Mississippi (Lurie 1978: 692). Their claims were not uncontested since parts of the Wisconsin, Chippewa, and St. Croix Rivers were debatable lands for them, the final extinguishing of their rights being accomplished by the Dakota and Chippewa after 1790 (Hickerson 1970: 83). Along with many others, they were participants in wars with the Dakota and the Chippewa (Jackson 1966: 20) and joined in many of the trading parties using the Mississippi as a means to the north. In later years they were also among the people wanting to share in the lead deposits in the southwestern Wisconsin (Clifton 1977: 226).

One of the most interesting aspects of Winnebago history concerns the reasons why their range extended from its original northeast Wisconsin habitat into the Mississippi area. Clearly pressure from the rear is an important part of the explanation, but there are other reasons as well. The resources of the Mississippi River basin itself and those of its eastward stretching tributaries were a force drawing the Winnebago west. Even while maintaining complex village life in such places as Lake Winnebago and the Upper Fox River, the Winnebago hunted intensively in the prairies, and they even crossed the Mississippi for bison hunting much in the same way as did the ancestors of Indians who eventually became full-time Plains dwellers (Lurie 1978: 692). A second potent factor in the westward movement of the Winnebago was the convenience of trade, particularly the presence of Mississippi-based traders along the river. Thus trade and hunting plus perhaps the excitement of the great congregations of different peoples

at places such as Prairie du Chien altered Winnebago settlement patterns toward the west.

The whole history of the Winnebago with regard to the Mississippi River extension of their tribal territory poses many unanswered questions, some of which have broader relevance than tribal history alone. For one thing, in the course of their dispersal west, the Winnebago shifted emphasis from an originally successful sedentary large village life to a more scattered pattern with smaller gardens, less nucleation, and a social structure more appropriate to such shifts. The gearing down of a political structure has as many lessons in it as does the growth of complex organization. The ways in which the Winnebago moved from political structures more functional within a large scale, more integrated tribal unit to those successfully operating dispersed communities have general application within the larger framework of political analysis. Similarly the question of the role of the fur trade in decentralization is an appropriate one to ask as is the contribution of bison hunting and the various new arrangements made possible by its pursuit.

IOWAY

Among the people along the Mississippi River on the way to the Dakota country, La Salle also listed the Ioway, whose location in 1680 was the Upper Iowa River (Hennepin 1966: 364). The location seems a sure one since Membre spoke of it as almost opposite the mouth of the Wisconsin (Mott 1938: 237-238) and Perrot pinpointed it as twelve leagues north of the Wisconsin (Blair 1911, I: 157). Indeed, the Ioway welcomed the fleeing Hurons, allowing them to settle near their upriver villages even though the refugees soon left the uncongenial prairie habitat. By 1668 Perrot spent the winter at Trempealeau (Kellough 1925: 232) where he established some sort of alliance with the Ioway. In the seventeenth and eighteenth centuries the Ioway moved widely, apparently responding to yearly rhythms of hunting to the west as far as the Missouri River and then returning to the Mississippi for trading (Mott 1938: 249-250) and more hunting. Long (Thwaites 1966: 239) found them as far south as Council Bluffs in 1817. Clearly the Ioway were being pulled westward by the presence of bison in large numbers, but their home territory along the Mississippi remained important. Even during the years when the Dakota claimed the west side of the Mississippi as far south as the Des Moines River, the Ioway enjoyed special sanction to hunt there (Wedel 1974: 164). By the early nineteenth century, Pike found the Ioway replaced along the river by the Fox (Jackson 1966: 209) and pushed back by the expanding Fox into the hinterlands behind the river. By 1820 the Ioway still claimed rights in the Upper Mississippi Valley between the Upper Ioway and the Des Moines (Blair 1911, II: 147).

SUMMARY

In the Upper Mississippi River Valley between St. Anthony's Falls in Minnesota and Guttenberg, Iowa, an incredibly complex series of events took place in the comparatively short period between the first European contact and the nineteenth century

land cessions that ended Indian claims in the area. The original native inhabitants (meaning by that term only those recognized to have been in the vicinity at the time of European documentation, not those with archaeologically verified long term presence there) who used the river for travel, warfare, and hunting seem to have been the Eastern Dakota and the Ioway. With the changes wrought by the wars of the Iroquois and the subsequent flood of Indian immigrants both above and below the Great Lakes, the composition of the region changed, and many new peoples began to compete for the resources of the river and the lands around it. These included such eastern peoples as Fox, Mascouten, Kickapoo, Potawatomi, Sauk, Huron, and Ottawa as well as others whose original locations were already west of Lake Michigan: Winnebago, Menomini, and Chippewa. The effects of changing locations, altering human life to accommodate new sets of conditions, and shifting alliances have yet to be assessed for almost all of these groups.

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EUROPEAN TRADE IN THE UPPER MISSISSIPPI VALLEY

The fur trade in the Upper Mississippi Valley was only a small segment of a continent-wide effort to extract from the northern New World wilderness something of tangible worth in the economic eyes of the Old. It was successful because the resources were there, the means of obtaining them could be mobilized, and the market was in general very persistent. It is a mistake, however, to view the trade as solely economic in function although it began by being so and continued to be an important source of revenue for all concerned. In its actual operation, it involved a whole series of other areas of human life, all of which were profoundly influenced by and even directly molded by the trade. These include not only the obvious ones of supply and maintenance but also those of politics, religion, war, and even demography.

The economic impact of the fur trade was of exceptional importance to European colonies established in the Americas. In a good year the quantity of furs transshipped from New World ports seems astonishing considering the way those furs were harvested and moved. For example, in 1735 nearly 100,000 skins of the "best quality" came through Quebec (Thwaites 1906: 230). Even in years of glut, the trade made fortunes or lost them, depending upon the risks of the game. And the risks of the game were considerable. The suppliers of furs, the Indian allies of the traders, could be unpredictable, unwilling to be manipulated, uninterested, and sometimes even personally dangerous. The weather and the miles of waterways between areas of supply and home bases made the safe arrival of canoe loads of furs a chancey affair. And the independent habits of the fur traders themselves made their regulation a matter of great difficulty; at times their behavior could not be controlled, and the consequences of their actions could not be predicted. In terms of the variables bearing upon the success of the trade, it is remarkable how year after year it was pursued with tenacity by French, British, and American entrepreneurs in spite of all the actual and potential problems. Only a profound concern with profits and a generous realization of them can explain such enthusiasm.

The fur trade was also an important arm of national policy for France, Spain, Great Britain, and the United States. It was used to jockey for position during periods of international tension among these powers, and their rivalries on the larger stage in Europe were reflected in the competition amongst their fur trade representatives in the New World. Alliances or lack of them resulted in support by Indian nations for one side or another, support often mobilized and maintained by fur traders. Traders often were the means of bringing governments in direct contact with distant peoples as Le Sueur did when he brought Dakota from the Upper Mississippi to Montreal to meet Frontenac (Wedel 1974: 160) or DuLuth extended French influence to Lake Superior (Meyer 1967: 6). Trade goods themselves were used as tools in alliance

building; Indians attached themselves to whomever gave the most as a French source ruefully observed in 1715 (Thwaites 1902: 334), and the extent of the supply and the cheapness of the goods very often played a significant role in determining the direction of Indian alliances (Coues 1965: 1222). The presence of fur traders in an area was often the means for staking a claim to it against claims by other nations, and it is clear that the trade often preceded the flag in terms of establishing actual control over land and its resources.

Christian missionaries came with the fur trade in its progress west from more settled colonies. Although mentioned as "desirable" in British sources, in actual practice it was French and Spanish priests and lay brothers who went into the wilderness to bring European religious teaching to the Indians. It sometimes seems as if sending missionaries was always mentioned as an afterthought to justify some line of action already decided upon. For example, Ft. Beauharnois, the Sioux Post, was built in 1727 to keep the Dakota happy by supplying trade, to keep the Fox in check through a military presence, and -- as a distant third -- to further religion (Thwaites 1906: 78). Nevertheless, the fact is that missionaries were a part of the spread of the trade. Sometimes the missionaries were in clear opposition to it as was Father Allouez when he moved from Chequamegon to Green Bay, "La Baye", to save the Indians from the contaminating effect of some young French traders (Neill 1888: 298), but more often the missionaries were a basic part of the whole operation. They even participated in trade themselves (Adams 1961: 111). In the articles drawn up for a French trading company among the Dakota in 1726, for example, the presence of missionaries was clearly stipulated, and their chapel was an integral part of the post (Birk and Poseley 1978: 88, Fig. 7). It should not be forgotten that Allouez himself first went to Chequamegon in 1665 at the invitation of traders who came to Quebec and asked him to return with them (Neill 1888: 298).

The fur trade and the success or failure of traders to enlist Indians on the proper side were real factors in victory or defeat for one or another national group in armed conflicts. The well known example of the French and Indian War is only one of many occasions when the trade and war went hand in hand. Traders often actively participated in Indian wars, moving with their Indian allies against their enemies (Kellogg 1935: 147, 200). Indeed, at times the traders themselves became military men on a grander scale by raising troops and fighting as part of the larger wars. During the Revolutionary War, the nephew of the Wisconsin pioneer trader and military man Charles de Langlade was on the Mississippi River recruiting Sauk and Fox Indians for an expedition to aid Canada against the Americans (Thwaites 1892: 44-45), and British traders continually urged Indians to harass Americans and plunder their property during the War of 1812 (Kellogg 1935: 291). It is impossible to study wars on the frontier without inquiry into the role of traders in instigating them and carrying them out.

The fur trade played a significant role in settlement patterns in the historic Northwest. Trading posts served as magnets for Indians, and their villages seem to have shifted about at least partly to take advantage of the location of trading stations. The trading posts were like any other important natural resource in the environment, and Indians either went to them to harvest what they needed or established social relations with those close enough to exploit the trading source directly. It is not known with any certainty how much of a demographic shift was directly caused by the presence of trading centers or how much resettlement of village life came about because of the presence of a resident trader. Such questions can as yet be addressed only in general terms as historic records provide tantalizing glimpses of representatives of disparate groups turning up at places like Chequamegon (Thwaites 1896-1901, 58: 41) or being urged to "remove" to the Mississippi in order to facilitate trade (Silverberg 1957: 81) or welcoming other Indians into their midst who might have access to trade (Blair 1911, I: 157). Deliberate efforts on the part of Europeans to move whole peoples from one area to another long preceded the great dispossessions of the nineteenth century. In 1704, for example, the French considered trying to persuade the whole of the Eastern Dakota to move south to the mouth of the Des Moines or the Missouri (Wedel 1974: 163), and the British at various times made it part of their policy to draw Indians from broad areas to a few trade centers (Norton 1974: 199).

The effect of the trade upon Indian life was for the most part a profound one causing changes in technology, social organization, and even ideology as traders interferred with or participated in native practices (Ray 1974). A pervasive inability on the part of both Indians and Europeans to understand the real differences in each other's perception of the nature of the world in general and political systems in particular led to many problems. The French - Fox wars are only one of the instances where these problems reached such levels as to involve real conflict. Other kinds of interactions resulted in widespread technological change (Quimby 1966) to the extent that by the nineteenth century many Indians could not live without the trade or at least thought that they could not (Kellogg 1935: 10). The policy of marrying into Indian families and then using affinal ties to further the trade was common among all national groups and was a potent force for causing local change. It was also a means of producing a metis population, which often served as a cultural bridge (Birk 1980: 130-135). The presence of the traders sometimes brought into contact with the Indians men whose behavior and moral character were not acceptable by the standards of the time. Brandy, women, and general lawlessness were seen by officials in New France as leading the Indians astray (Thwaites 1902: 214, 339, 390), and that particular litany of faults attached to the traders no matter what the national group of origin.

The participation of the Upper Mississippi Valley between Guttenberg, Iowa, and St. Anthony's Falls in Minnesota in the fur trade was an extremely important one. The Great Lakes area was very early seen in the east by both French and British trade interests as a place rich in furs and a ground for working out national rivalries (Norton 1974: ch. 9). British fur traders dreamed of ousting the French and pushed continually from such bases as Albany in New York, nibbling away at the southern reaches of French influence and trying to seduce French Indian allies. The Mississippi River as the farthest west of the French outposts in the Great Lakes region was the major route draining the northern forests of their fur bearing animals. The passage down the Mississippi and along the Wisconsin to the portage with the Fox and thence to Green Bay and eventually Mackinac was for 150 years the great highway from west to east (Thwaites 1908: 148; Gates 1933: 35-43). Understanding the events along this water route is easiest done by dividing those years into French, British, and American segments.

FRENCH TRADE PERIOD

The structure of the trade in the Upper Mississippi Valley as elsewhere usually involved companies organized as monopolies for a certain number of years. A trading company was empowered to go only where its articles said it should go (Thwaites 1906: 10-11), and no one else was allowed to hunt in that territory. Any trade canoes sighted within a legally established trade area without permission of the company were liable to confiscation and fines. The licensed traders were, however, plagued by the presence of coureurs de bois, who traded illegally where they could get away with it, and it is probably a coureur de bois who first visited the Upper Mississippi region and began to tap its fur resources.

The earliest reported exploration in the Upper Mississippi was that of Pierre Radisson and his brother-in-law Medard des Groseilliers, who perhaps fell just short of being full fledged coureurs de bois themselves. Radisson's accounts of their voyages to the southern shore of Lake Superior and probably to the Mississippi are very confusing as to routes taken and peoples encountered, but they were in the area at least by 1655 and certainly by 1660 (Adams 1961: 40 and following). In spite of problems with Indians, illness, and bad weather, Radisson and Groseilliers returned from the Mississippi with "a great store of castors' skins" (Adams 1961: 101), which were hunted from headquarters possibly on Pelee Island in the Mississippi River itself. Their trip back most likely along the Wisconsin-Fox route to Green Bay and from there to Quebec inaugurated this important trade route as the principal highway for Mississippi fur traders.

The voyage of Radisson and Groseilliers to the south shore of Lake Superior was just the beginning of the French fur trade there. The "great store of castors' skins" encouraged others, and by 1665 or 1666, four French traders had penetrated south and were visiting the "country of the Scioux" (Blair 1911, I: 182). Chequamegon was already a trade center. From Chequamegon to the Mississippi was only a matter of a short paddle on the Brule, a portage to the St. Croix, and down the St. Croix to the "great river" itself. The ease of this passage led to the first great controversy over trading rights on the river, the celebrated dispute between La Salle and DuLuth in 1680. La Salle had obtained official permission to trade in the Illinois country west of Lake Michigan, not in the north toward Chequamegon but west toward the Mississippi River and south into Illinois. At the same time DuLuth, without royal patent or license of any kind, was at Lake Superior where he initiated French contact with the Dakota, probably the Teton rather than the Eastern Dakota (Kellogg 1925: 211). The two explorers' interests collided when Father Hennepin, sent by La Salle to explore the Mississippi northward and investigate its possibilities was taken captive by the Dakota (Hennepin 1966: 222). Hennepin's party was rescued by the prompt and courageous actions of DuLuth, who brought them all to safety in Montreal by way of the Mississippi and the Wisconsin-Fox River route. La Salle's annoyance at the presence of DuLuth in the north is clearly evident from his ill-tempered accusations that DuLuth's presence was illegal and that he was using diplomatic cover to hide a bare-faced expedition after furs (Hennepin 1966: 366). His complaints became almost shrill as he averred that DuLuth's presence in the north and his use of the Wisconsin-Fox route would at the least completely ruin La Salle's trade (p. 367). His attempts to establish his exclusive right to trade along the Mississippi include an assertion that he had already built a post on the Wisconsin, presumably at the mouth of the river and possibly at Prairie du Chien. Whether or not he actually did so has never been ascertained (Draper 1888: 322).

The next important French presence on the Upper Mississippi was that of Nicolas Perrot, whose accounts of his work and of Indian affairs remains the single most useful source for the earliest French period (Blair 1911). Perrot was a trader and administrator as well as a very knowledgeable observer; and he was responsible for the construction of a number of traders' forts along the Mississippi. The first of these, Ft. St. Nicolas, may or may not have been built in 1685 near the mouth of the Wisconsin, probably north of it at Prairie du Chien although no one really knows (Draper 1888: 323). The dispute over the location of Ft. St. Nicolas and the other structures built on the Mississippi by Perrot stems from the fact that to date not one of them has ever been relocated and properly identified through archaeological excavation. The forts were certainly not substantial affairs and were probably little more than stake enclosures with simply constructed interior buildings for the protection

of furs and the minimal comfort of the traders (Thwaites 1902: 195). In addition to Ft. St. Nicolas, the several trading forts or posts associated with Perrot include a wintering place at Trempealeau (Nute 1930: no. 127) and Ft. St. Antoine near Lake Pepin (Nute 1930: no. 124).

It was at Ft. St. Antoine in 1689 that Perrot took possession of the surrounding country for France in a ceremony similar to one previously staged at Sault Ste. Marie (Blair 1911, I: 244). With as much pageantry as he could muster in the wilderness, Perrot claimed -- among other places -- the Mississippi and "the country of the Nadoescieux" in the presence of both native peoples and Frenchmen. Ft. St. Antoine remained in use only a short time and was abandoned at the outbreak of King William's War when the land west of Lake Michigan was evacuated by the French (Kellogg 1925: 248). It was not until 1693 that they returned to the Mississippi River and began again the establishment of forts and trading posts along its upper reaches.

The forts themselves were much more than places in which to safely store furs and merchandise although they were important magazines and depots. They were additionally places of "official" status and often housed military detachments as well. Sometimes they had chapels in them as did the eighteenth century Ft. Beauharnois (Birk and Poseley 1978: Fig. 6), and they frequently contained priests in addition to traders and soldiers. One of the major functions of the forts was to attempt to preserve peace among the native peoples and to serve as a place where peace talks could be held. As one of his charges at Ft. St. Antoine, for example, Perrot was supposed to make peace between the Dakota and the Chippewa (Thwaites 1902: 155-157), and he certainly was active in promoting peaceful alliances among them and among all the other groups within his jurisdiction. The forts also served as refuges for friendly Indians (Thwaites 1902: 126), places where the friends of France might remain in safety. They were also centers for the distribution of gifts, so essential in priming the economic pump of the Indian trade and so necessary to the well being of complex alliance systems. Forts could also be places where blacksmiths worked and tools and weapons repaired -- at a price. Small and even mean some of them might have appeared, but the diversity of the activities carried on around them had the potential to influence native peoples in the wilderness far in excess of their unprepossessing physical appearance.

Like Perrot, Le Sueur established more than one fort on the Mississippi (Nute 1930), and again like Perrot's forts, Le Sueur's have never been investigated through archaeology. Le Sueur was an early witness to the French presence in Wisconsin since he first came with DuLuth in 1683 from La Baye, and he was apparently involved in the construction of Ft. St. Antoine and in Perrot's ceremony of taking possession in 1689. When the French re-occupied their old places in 1693 after a several years' hiatus,

Le Sueur was sent to the south shore of Lake Superior and to the Mississippi in the familiar role of peacemaker between the Chippewa and Dakota. In 1695 he built a fort on an island in the Mississippi, probably Pelee Island, where the Hurons and Ottawas had once taken refuge from the Iroquois, and he also constructed another on the west bank of the Mississippi opposite the mouth of the Chippewa River (Wedel 1974: 160). The latter fort, which was known as Ft. Bon Secours or Ft. Le Sueur is of unknown date and may have also involved Perrot. Le Sueur's last fort in the area was built in 1700 and called Ft. Vert or Ft. l'Huillier. It was put not on the Mississippi but on the Blue Earth, well away from Indians passing up the river on their way to attack the Dakota (p. 161) or moving down the river to attack Central Algonkian villages.

Le Sueur was following in the path of Perrot by combining expertise in Indian administration and trading. Le Sueur, thought to be something of a rascal by certain French officials (Thwaites 1902: 174-177), illustrates how easy it was for the right hand to keep its actions from left. Forbidden by law to trade for beaver pelts during the disastrous glut-on-the-market years, Le Sueur had a license which, although not allowing him to trade for beaver, served as a cover by means of which he accumulated beaver pelts anyway. By 1700, Le Sueur was officially engaged in mineral exploration and trade in other than beaver skins, but his beaver pelts continued to accumulate (Wedel 1974: 162). Even for Le Sueur the trade was not without its hazards: in 1702 Ft. Vert was attacked by a joint Fox-Mascouten war party and had to be abandoned (p. 163).

Perrot and Le Sueur are the most prominent of the early Frenchmen living within and trading along the Upper Mississippi, but they were not the only ones. Besides their own aides and assistants, they were joined in the wilderness by numbers of coureurs de bois. These illegal traders lived with the Indians, hunted with them, and provided the most immediate source of trade goods in many areas. How many of them were present on the Mississippi and its tributaries is unknown, but when Frontenac proclaimed the king's general amnesty in 1680 for coureurs de bois who "came in" out of the forests, at least 600 of them were present in the western woods (Kellogg 1925: 219). If only a quarter of that number were operating in the fur-rich Mississippi area by the time Perrot and Le Sueur were there, they might have had to contend with 150 other Frenchmen in the same territory and dealing with the Indians, who probably were not aware of the problems involved in accepting unofficial advice from extralegal sources.

In the beginning the pattern of French trade on the Mississippi revolved around the various forts successively built and abandoned during the later years of the seventeenth century. Gradually, certain of the locations themselves became key centers of activity and were used over and over again. Perhaps the geography of the river made such places easily identifiable even to newcomers or perhaps they had been long-term sites for Indian habitation; perhaps some of them were chosen because of

the natural beauty of the spot. The area around Lake Pepin was one such magnet. Both Perrot and Le Sueur chose to build forts there on both east and west banks, and, of course, Pelee Island was a principal feature of the river there and a convenient refuge for both Indians and French. Between 1696 and 1701 the Mississippi trade centers were officially evacuated (Kellogg 1925: 268), and when there was peace again in the west, the initial reoccupation was again in the area of Lake Pepin. Ft. Beauharnois, probably more properly called the Sioux Post, was built on the shore of Lake Pepin in 1727. It was abandoned in 1729, but a second Sioux Post was built there in 1737 and a third in 1752 (Birk and Poseley 1978). The location of none of these very important structures is known nor is there agreement about the circumstances of their construction. Because of the complex picture at Lake Pepin and the significance of what happened there, detailed archaeological reconnaissance and documentary research are of the highest priority. Lake Pepin is one of the major historic zones along the entire Upper Mississippi River.

A second location of great importance to the fur trade is Prairie du Chien. After the Northwest was reoccupied in the eighteenth century, fur traders and Indians alike came to regard Prairie du Chien as a principal place for "Grand Encampments" (Jackson 1966: 33). It became the location for traders to rendezvous in the spring before they gathered together their furs for the long trip to Mackinac; it was a place for outfitting traders for their winter dispersal; and it served as a center where large numbers of Indians came to trade (Oerichbauer 1976). While the trade center at Lake Pepin suffered eclipse in the eighteenth century, Prairie du Chien's role in the trade grew larger. Eventually Indian villages were settled there (Kellogg 1935: 16), and traders came to live there, often marrying and establishing families. In the accounts of the nineteenth century Prairie du Chien looms large as a place of colorful meetings, vivid trade encounters, singing of the calumet, and liquor-augmented celebration (Parker 1976: 187; Gates 1933: 45). It was also of great strategic importance in control of the trade and, indeed, of the whole Upper Mississippi Valley. It dominated the Wisconsin-Fox water route and hence the flow of furs east and merchandise west. Influences from the New Orleans area met with upper country interests at Prairie du Chien, and the struggle often took the form of armed encounters between representatives of different national groups (Kellogg 1935: 242). Traders sometimes battled each other, furs were confiscated or burned, and even regular military units fought for its control.

In spite of the high level of activity in the fur trade period at Prairie du Chien, it is difficult to trace clearly the succession of historic structures built there and impossible to pinpoint with certainty the location of any of them. Perhaps Ft. St. Nicolas was built there by Perrot; perhaps La Salle's fur trading establishment of 1680, if he ever actually built it, was there (Draper 1888: 322). Clearly there was an "Old French Fort" there put up some time after 1755, but even this one whose remains were apparently still visible in 1880 has not been

verified or explored archaeologically (Oerichbauer 1976: 70). Other forts or trading posts at Prairie du Chien are mentioned in the historic sources: a traders' fort where a great store of furs was whisked away from American soldiers while the fort itself was burned in situ (Thwaites 1908: 411) and, of course, Ft. Shelby, erected during the American period, and its successor Ft. Crawford. Prairie du Chien is another major historic zone connected with the fur trade period in the Upper Mississippi Valley and as such ranks with Green Bay and Michlimackinac in significance. It is archaeologically unknown, though, and only archaeological work reinforced by historic research will settle the questions that have not been answered about the structures that were built there in the French past.

A third historic area on the Mississippi is the land near Trempealeau. It was first used as a place for the construction of a French fort in 1685 when Perrot wintered there (Pierce, Squires, and Kellogg 1916: 118) on his way to establishing Ft. St. Antoine on Lake Pepin. It was while he was there that Perrot met and negotiated with the Ioway thus demonstrating their presence along the Mississippi River in Dakota country in the late seventeenth century. A second French fort was built at Trempealeau in 1731 and may have been maintained there for some time; the record of its tenure there is equivocal. Both of these forts may have been located and tested in the last century by local historians and others, but the quality of the work, the vagueness of the published accounts, and the absence of any artifact analysis make it difficult to judge whether or not the remains represent a French occupation and if so, which one or ones (Squire 1895: 505).

The many problems that beset the French in the first part of the eighteenth century seem to have all involved in some way or other their relations with the Fox. Bitter enmity with those Indians and intermittantly with all peoples allied with them caused serious ruptures in French/Indian intercourse and wreaked havoc on the fur trade. The original source of discord between the French and the Fox involved the determination of the Fox to retain their middleman position vis a vis the Dakota by preventing the French from trading directly with those who hunted the fur-rich territory of the Upper Mississippi Valley (Thwaites 1906: 8; Silverberg 1957: 113). To this end the Fox maintained control over the Wisconsin-Fox River water route to and from the Mississippi, exacting tribute from all who attempted to use it. The withdrawal of French posts in the Northwest after 1696 must have reinforced Fox perception of the French as being afraid of them since they rapidly assumed a more militant character. It was the Fox with their Mascouten allies who attacked Le Sueur's Ft. Vert in order to cut off supplies to the Dakota (Wedel 1974: 163), who were thus eliminated for the time being from any direct contact with the French for trade. The ensuing Fox War was carried out for the most part to the east of the Mississippi River, but the Mississippi was in fact at the center of much of the conflict. Controlling the

Fox-Wisconsin water route meant controlling the Mississippi trade. Initial French dominance in the war resulted in a lull around 1715 after which the French once again moved west. A fort was built in 1717 at Green Bay, and contact was resumed with the Dakota by 1727, when the Sioux Post, often called Ft. Beauharnois, was built on Lake Pepin.

Ft. Beauharnois is the only one of the early French forts in the Upper Mississippi Valley for which a drawing survives and for which a description of the construction site is available. The fort was rectangular with two corner bastions, and it measured about 100 feet per side. The walls were of 12 foot stakes and the interior contained a guardhouse, a warehouse, trading houses, a house for the "commandant", a chapel with attached priest's house, and a powder magazine well separated from the other buildings (Birk and Poseley 1978: 88, Fig. 7). The stake enclosure took only four days to erect, but the entire fort was not finished for about a month. Its location was not well chosen since it flooded in the spring when the French were obliged to camp outside its walls (Thwaites 1906: 26). This first Sioux Post, in spite of the drawing and long-standing interest on the part of historians, has not been relocated, and intensive archaeological field survey to do so is clearly overdue (Birk and Poseley 1978: 73).

Renewed conflict with the Fox resulted in the partial abandonment of Ft. Beauharnois in 1728 (Birk and Poseley 1978: 25). It was totally abandoned shortly thereafter, but a second fort (usually called in modern sources by the same name) was established in the same area; this one, too, was evacuated by 1737. The Fox wars, however, were not resolved, and the level of ferocity escalated through time. Pitched battles and shifting Indian alliances and loyalties made French outposts on the Mississippi vulnerable to attack and the Mississippi-Wisconsin-Fox route almost suicidal. The Fox wars with their bitter harvest of fear, crisis, and hostility ended by 1740 with the near extermination of the Fox and the near ruin of French hopes in the far Northwest. Disruption in the trade, dislocation of Indian life, and general disturbance in French colonial rule left the Upper Mississippi Valley in a state of uncertainty. Gradually, once an end to the Fox wars seemed to have surely come, traders and their business returned and settled in again at Prairie du Chien from Green Bay, which had been a more secure headquarters during the fighting. By 1752 still another fort was built on the Upper Mississippi at Lake Pepin, this time again on Pelee Island (Birk and Poseley 1978: 32). It was intended as a post to serve the Dakota then residing on the west bank of the Mississippi. From the charge given to its builder, it contained more substantial structures than did the old state enclosures of previous years. This last French post in the Upper Mississippi area included buildings at least partly made of stone within the protective palisade. It, too, was shortlived and was burned by the French themselves in 1756 (p.31).

The destruction of the last French fort came about because of the French and Indian War, which brought to an end French control in the Northwest. In a large measure the French and Indian war was a reflection of the rivalry between France and Britain on a much larger scale and was fought out elsewhere for much of the eighteenth and early nineteenth centuries. But in the New World the form this conflict took was governed by the lure of the fur trade and the need for controlling markets for manufactured goods. The Upper Mississippi Valley with its choice furs and native consumer population was a temptation to British traders coming west, south of the Great Lakes. The French with their control over the long water routes in the north had a vast and unwieldy network of Indian alliances, resident traders, and procurement systems that in the end proved vulnerable to British penetration. In particular, Indians who hitherto had traded with the French began to move east to take advantage of cheaper goods coming from British sources (Norton 1974: 91). French response often involved using still loyal western Indians as a means of punishing defecting tribesmen and attacking British positions; western officers such as Charles de Langlade appear in battles far to the east of the Mississippi Valley (Thwaites 1908: 443-444). Indeed Indians from the Upper Mississippi Valley were certainly present with De Langlade at the fall of Quebec in 1760 when the end came to French dominion in the north.

BRITISH TRADE PERIOD

It was more than a year before official British influence was felt in the trade of the Upper Mississippi Valley. The first wave of British subjects to appear in the area were traders who arrived before the military government and some of who were apparently not very reputable people (Kellogg 1935: 8). If they resembled the coureurs de bois who preceded them, then they were lawless, debauched, and fully as capable of leading the Indians astray (Thwaites 1902: 339, 390). By this time the military arrived, a policy of controlling traders required them to be affiliated with a military post and subject to its commanding officer. Trade with the Upper Mississippi was in this way assigned to Green Bay, but owing to local disputes over rights to trade there, no post was immediately established. Thus it was difficult to carry on trade legally in the Upper Mississippi Valley in the initial period of British rule.

The whole British trade philosophy was different from the pattern of French trade that had preceded it. British attitudes in the trade at first included a scaling down of the custom of giving gifts and a denial of credit. Gift giving was extremely important in Indian systems of exchange, and the failure to participate was tantamount to declaring unfriendliness if not downright enmity. The British also expected the Indians to come into centralized posts to trade while the older French design was for the most part to have traders go to the Indians and use

personal and familial ties to facilitate exchange. In the beginning British traders were forced to rely on the French organization and, indeed, upon French personnel, but by 1763 the pattern was changing. However, the absence of a post at Green Bay provided the Upper Mississippi Indians with few options. They dealt with illegal traders or they made their way to the nearest post at Michilimackinac.

A third option that more and more of them were willing to follow was to seek trade from Spanish or French sources. At that time the west bank of the Mississippi was Spanish territory, and a major Spanish presence had been established at St. Louis in 1765. Spanish traders moved with alacrity into the void left by the British along the Mississippi, and they were at Prairie du Chien by 1767 (Gilman 1974: 9). The Mississippi River was also a highway down to French sources in Louisiana, and French traders appeared with increasing frequency at Prairie du Chien. Indeed, the Indians, perhaps with old loyalties uppermost, seemed happier going down the Mississippi to trade with Frenchmen than following the Wisconsin-Fox route to Mackinac (Kellogg 1935: 39), where many of them found the British traders parsimonious and even stingy (p. 20). It was the British trade policy, so different from the previous French pattern, that was an underlying cause for Pontiac's Conspiracy, the Indian war that swept the western lands like a brush fire in 1763 and rendered Michilimackinac impotent until its suppression (Peckham 1961).

By 1766 observers thought that Spanish and French traders held a monopoly on the resources of the fur trade from all the lands lying between the Missouri and the Mississippi and, if previous patterns are any indication, from lands east of the Mississippi as well (Thwaites 1908: 364). British response to this intrusion was to throw open the trade and permit independent traders to move into what they had come to consider "Indian territory". In 1767 a record sixty trade canoes made the passage west from Mackinac to Green Bay, and a large number of these were bound for the Upper Mississippi. The net effect of this countermove was to swamp Spanish and French trade by large numbers of traders and great quantities of goods, and gradually the threat from the south receded. The Spanish, however, continued to send "galleys" up the Mississippi to intercept furs that they conceived as having a source in Spanish territory (Draper 1888: 341), and they continued a policy of generous presents that drew Indians from the Upper Mississippi down to St. Louis to receive them. As late as 1769 Kickapoo, Mascouten, Miami, Potawatomi, Ioway, Chippewa, Sauk, Dakota, and Fox were recorded as being in St. Louis to receive presents of goods and food from the Spanish (Thwaites 1908: 299-304). Such massive deflections of their customers were continual irritants to the British trade and sources for hostilities between traders of different national origins for many years.

In 1766 a semi-offical expedition went up the Mississippi to explore for a northwest passage and to set up good relations between Indians and British traders at Ft. Michilimackinac (Parker 1976: 18), perhaps with the intention of bypassing the Hudson's Bay Company operating in the north. The journals left of this expedition, those of Jonathan Carver and James Goddard, offer insights into the progress of the British trade in its competition with the French and Spanish interests. Carver especially noted attempts on the part of the French traders then in the employ of the British who tried to discourage English traders from even attempting the Mississippi trade because of hostile Indians and concerted Indian uprisings (Parker 1976: 27). When he reached the Dakota north of Lake Pepin, he tried to persuade them to go to Ft. Michilimackinac for trade rather than let their furs go to the French (p. 116); he even tried to ply them with liquor in order to encourage their friendship with the British, but the Dakota sagaciously refused to partake. Repeatedly he warned them against the French and hinted darkly of their perfidy contrasted with British virtues (p. 119). At Prairie du Chien he attempted to counter French gift-giving in the area by doing the same himself, and he clearly felt that his efforts were responsible for turning the Indians toward Michilimackinac rather than to the French in Louisiana (pp. 123-124). Carver's valuable observations illustrate British anxieties in the face of competition from the French and Spanish, their uncertainty as to the appropriate policy to follow, and their recognition of the enormous value of the Upper Mississippi market for supplying furs, accepting British manufactured goods, and generating revenue for the crown.

The difficulties in persuading Indians to come to Michilimackinac led eventually to the reorganization of the trade in a more open manner. Small trading houses were set up in inland Wisconsin and the Mississippi was crossed for trade with the Dakota (Kellogg 1935: 104). Among the traders operating on the Mississippi during this period was Peter Pond, who was dealing with the Dakota in 1774 and 1775. He was working from a base on the Minnesota River, but his description of his organization is helpful for understanding how traders exploited the fur market at that time. He first arrived at Prairie du Chien with "nine clerks" (Gates 1933: 44) whom he sent out along the tributaries of the Mississippi for the winter. In the spring he rendezvoused with them at Prairie du Chien, counted his take, and prepared for the trip back to Ft. Michilimackinac. Even by 1774 Pond met many French traders from New Orleans at the great encampment at Prairie du Chien; the specter of French involvement in the trade had not been exorcised.

Traders' involvement in Indian affairs was expectable and continuous. They were the people on the ground most intimately connected with various Indian groups and were seen by the official sources as capable of manipulating Indian alliances and communicating to them whatever needed to be said. Pond was caught up

in the long-standing Dakota-Chippewa wars and attempted to create peace between them (Hickerson 1970: 69). The whole expansion of the Chippewa at the expense of the Dakota came to a head during Pond's time on the Upper Mississippi; the Chippewa were establishing themselves in the Minnesota north woods, and Pond's peace was only a temporary one bought at the price of "six large belts of wampum" (Gates 1933: 48).

In the last quarter of the eighteenth century Britain was groping for a policy for trade and relations with the Indians that would answer its own imperial needs. There was considerable debate as to whether or not to deport French people from Indian territory in an Acadian type of exodus. The pious hope of the British had apparently been that the French would automatically take themselves off to France or elsewhere leaving the Northwest essentially vacant. In actual practice, of course, the French were not French at all but New World people of French origin; France would be as foreign to them as England itself. In the end the French in the Northwest stayed, partly because the British could not bring themselves to attempt an evacuation and partly because they were needed. Many of the "British" traders were in fact French throughout the British period. Another problem of concern in the Northwest was that of the establishment of civil government. Certainly trade was rather quickly reorganized on a civil basis in 1763 (Kellogg 1935: 29-31) with a board of trade empowered to license traders and a commissary who was the representative of a civil superintendent of Indian affairs. But what kind of government should be extended elsewhere remained a real problem. Finally, the British debated anxiously whether or not non-Indian settlement was to be encouraged there or whether the Northwest was to forever remain an Indian area with only traders as representatives of non-Indian society. The British appeared headed for an Indians/traders only policy in the Northwest when the American Revolutionary War intervened.

During the first years of the Revolutionary War, the effect on Upper Mississippi trade seemed negligible. The significant factor was, of course, the supply of goods to be used in trade (Kellogg 1935: 138). Both Indians and traders would adhere to the government that could supply them, and at that time the supply of goods through Montreal never wavered. In fact, scarce goods seem never to have hampered the trade during the Revolutionary War at all; if anything, trade seemed to have expanded during the war years as traders penetrated with greater frequency the fur bearing lands to the west of Lake Superior. Many of these furs wound up at Prairie du Chien and moved east over the Wisconsin-Fox water route. The fact that control over trade routes remained under the British materially strengthened their grip on the trade itself.

The war, however, directly involved Mississippi Valley traders and their Indian allies. The traders were expected by their country of allegiance to provide Indian warriors to fight wherever such support might be needed. Charles Gautier, a nephew of De Langlade, was actively recruiting Indians on the Mississippi to serve in an expedition against the Americans in 1778 (Thwaites 1888: 100-111), and his Fox and Sauk group saw action briefly on Lake Champlain in New York during the war. Similarly, American agents were seeking to unite Mississippi Indians to their cause and were surprisingly successful considering the attachment that the Indians might have been expected to feel toward the source of their trade goods. Many of the Upper Mississippi Valley Indians pledged, if not their fealty, at least their neutrality in the British-American conflict. These included Sauk, Fox, Chippewa, Miami, Potawatomi, Mascouten, and Kickapoo (Kellogg 1935: 153,155). Conspicuously loyal to the British interests were the Dakota, whose furs continued to move over the critical water routes to the east, and the Menomini, who even publicly expressed their loyalty to the king during the war (Thwaites 1908: 447).

Alliance with the Dakota enabled the British to mount an offensive down the Mississippi against the Spanish at St. Louis in 1780 (Thwaites 1908: 406). This expedition consisted of Indians with a sprinkling of French and British military men all under the direction of a Prairie du Chien trader who had once been a military officer in the British service. Thus some of the traders at Prairie du Chien were deeply involved in the Revolutionary War on the British side, not merely as participants but as leaders, too. The St. Louis expeditionary force constructed a fort at Prairie du Chien to house the furs of traders impressed into joining it; the location of this palisaded enclosure which included warehouse or warehouses is not known, but Charles De Langlade was left behind to guard it (Thwaites 1908: 411). The conquest of Spanish Louisiana at the hands of traders and Indians was more than either group could manage, and they all retreated without having accomplished their objectives. Most of the furs neatly stored in the warehouse at Prairie du Chien were rescued before being captured by an American party in the area, and the rest were destroyed along with the fort itself to prevent either from falling into American hands (Thwaites 1908: 416).

The struggles along the Mississippi River during the Revolutionary War were curiously broad in their involvement of different national groups. Ostensibly in control of the upper valley, the British had to defend it not only against the Americans, with whom they were at war in a major way farther east, but also against the Spaniards, who declared war in 1780 apparently solely to grab at the Upper Mississippi Valley lands east of the river. Both American and Spanish soldiers were joined from time to time by French soldiers of

fortune who officially served Spanish interests and unofficially their own at one and the same time. Through the machinations of the latter, for example, the Dakota were finally detached from their allegiance to the British (Kellogg 1935: 175). British concern with Spanish inroads from the south was a real one since the Upper Mississippi Indians preferred a Spanish alliance to one with the British. For whatever reason, perhaps an identification of the Spanish with the old French regime or perhaps a dislike for the trading methods of the British or for the British themselves, the Indians continued to seek St. Louis to promise their loyalty or at least their interest. What kept them from becoming a formidable force at the backs of the British was the fact that only the British could continue to supply them with trade goods. In spite of Spanish connections, most of them had to go to Michilimackinac to ask for presents and to trade for what they needed. Thus the people of the Upper Mississippi Valley were kept relatively quiet and undecided along that important waterway.

One of the means of keeping the Spanish interest before Indian eyes was the establishment of a military post south of Prairie du Chien (Thwaites 1908: 442). This post, supported by a detachment of militia some 40 members strong, was located along the Mississippi among the Fox and the Sauk, probably just above the mouth of the Des Moines River. Its role was to support the Indians in their Spanish leanings and more importantly to prevent the British trade from moving freely into the area on the west side of the Mississippi River. Although located too far south to be included within the Guttenberg to St. Anthony's Falls stretch of the Mississippi, this fort continued to affect the trade at Prairie du Chien and the traders who exploited the lands on both sides of the river. As early as 1773 the Spanish had been catching and prosecuting traders moving into the western lands (Draper 1856: 231); with a permanent post established near the Des Moines, they were in a position to be even more vigilant. They were certainly not above coming up the river in eighteenth century versions of gunboats to raid Prairie du Chien traders whose furs had come from across the river in Spanish territory (Draper 1888: 341). Spanish galleys even cruised the Mississippi to intercept traders coming from the north to the mouth of the Wisconsin (Coues 1965: 1221). The Spanish authorities were, however, pushing the tide back with brooms. The prime areas for fur gathering were moving west and northwest as more eastern regions yielded less and less. The trade as a form of predation without satiety required ever expanding efforts along a constantly moving front. What had been a trader's paradise in the seventeenth and eighteenth centuries was becoming a land fit only for settlers and an orderly life. The land beyond the Mississippi was paradise renewed.

AMERICAN TRADE PERIOD

Peace after the Revolutionary War should have ended British involvement in the Upper Mississippi trade, but many factors combined to keep a British presence there long after the American authorities envisioned a withdrawal. For one thing, the peacetime borders were somewhat uncertain in the Mississippi River uplands; for another, British commercial interests correctly anticipated the ruin of the trade with the loss of the fur bearing interlands of the Northwest. In response to their objections, American and British negotiators worked out a compromise known as the Jay Treaty (Kellogg 1935: 225). This treaty permitted trade by British as well as Americans in the Northwest territory, and it laid the groundwork for hostilities that were to fester and finally erupt in the War of 1812.

In the far reaches of the Upper Mississippi Valley and well away from American garrisons in what was after all still Indian territory, British traders held on to the trade routes and trade sources they had so laboriously acquired from the French (Birk 1980: 40). With the expansion westward of the trade, the whole enterprise underwent an exuberant enlargement both in numbers of people involved and in the volume of furs. This was the period of the great trading companies such as the North West Company, the Mackinac Company, and the XY Company. These organizations operated in competition and then in combination for the trade of the Northwest. One of the posts occupied by both North West and XY Companies has been located and excavated on the Yellow River providing the only evidence of such activities and their establishments which were once ubiquitous (Oerichbauer 1981). The Mississippi traders north of Prairie du Chien carried on their trade in the old way, obtaining supplies from Mackinac on their once a year flotilla and fading back to the Mississippi the rest of the year. Again, the Wisconsin-Fox route was a vital one feeding these men back and forth between the Straits of Mackinac and the great river. As before, the Dakota lands beyond the river were the source for many of the skins that were gathered for shipment through Prairie du Chien; and as before, the Spanish authorities in St. Louis -- although they thought about it (Thwaites 1908: 449) -- were powerless to prevent the poaching carried on by British traders. As far as the Upper Mississippi Valley fur trade was concerned, the Revolutionary War might as well not have been fought, so little did it affect the trade.

By the turn of the century Prairie du Chien was beginning to take on the character of a permanent non-Indian settlement as well as a great fur trade rendezvous (Oerichbauer 1976). Traders were living there or at least maintaining residences in greater numbers, and their presence generated a population of hangers-on to the trade: lower level traders, bookkeepers, servants, and hunters. There were also Indians at Prairie du Chien and the Indian wives of fur traders. No matter what the national origin of the traders, they frequently acquired Indian

wives and families, and a growing metis population was the result. Prairie du Chien as a center of nineteenth century trade is a historic district of great complexity and enormous cultural-historical potential for future scholarly investigation.

The sale of the vast Louisiana territory by a financially hard-pressed French government to the United States in 1803 was a step in the ultimate transfer of trade privileges in the Northwest to exclusively American interests. With the Spanish garrisons at St. Louis gone and the temptations of French and Spanish traders from New Orleans eliminated, Americans began to feel that the British were a more than awkward presence in American Lands. Rivalry between British and American traders was intense (Coues 1965: 1222, 1232), and the American government sought to put pressure on the British by increasing their military occupation in the Upper Mississippi Valley, building more forts and trading posts, and violating the provisions of the Jay Treaty by requiring licenses, duties, and obedience from British traders (Jackson 1966: 256).

One of the first attempts by the Americans to increase their presence in the Upper Mississippi area was the 1805 exploratory mission of Zebulon Pike (Jackson 1966). He was ostensibly establishing peace between the Dakota and the Chippewa, and he was also assessing the British trade laying out potential sites for American forts the length of the river. One of these was a site on the west bank of the Mississippi on a hill near Prairie du Chien (p. 23), and another was a trading house site three miles above the mouth of the Wisconsin. Pike nibbled away at British influence in the area by passing out American medals in exchange for British ones, raising the American flag, and speaking to the Indians about the new American government. He sought to counteract rumors spread by traders about the Americans (p.22) and to establish respect for American authority among the native peoples. In a direct assault on the freedom granted British traders under the Jay Treaty, he admonished the North West Company to cease showing the Union Jack or distributing British medals or speaking to Indians on political subjects (p. 258); most important, he ordered the traders to come through Ft. Mackinac, where duties could be assessed on their merchandise. The response of the North West Company was that traders, suffering under the privations of the wilderness, were innocent of political intent (p. 260), and it does not seem as if they complied with Pike's directives whenever they thought they could get away with it.

The nineteenth century fur trading companies flourished in the Upper Mississippi Valley. Such companies had existed for a long time -- the Hudson's Bay Company was established in 1670 -- but in the Upper Mississippi Valley their expansion and success was comparatively late, and their operation was often affected by political events. The North West Company had been the principal organization in the Northwest; but after 1808 when the United States government closed the Louisiana Territory

to foreign traders in clear violation of the Jay Treaty (Gilman 1974: 12-13), it removed most of its activities into Canada. Within the United States a second company, the Michilimackinac Company, was organized to fill the void. Since it was owned by the same Montreal traders who controlled the North West Company, it was not exactly an independent competitor. The Michilimackinac Company had in effect a monopoly on trade south of Lake Superior, and it had no real rival on the Mississippi River in the Dakota trade since 1807 when it absorbed Robert Dickson's Company. The latter had been set up by Prairie du Chien and Green Bay traders in order to compete with the North West Company (Gilman 1974: 11), but their lack of any real capital led to their being taken over by the expanding Michilimackinac Company. The American Fur Trading Company, founded by Jacob Astor in 1808, was the ultimate heir of all these organizations, merging with the Michilimackinac Company in 1811 and standing alone on the Mississippi when the War of 1812 began.

In general, the War of 1812 seems to have developed as an aftermath of the Revolutionary War, a means of settling problems left over from that conflict. On the Mississippi River there was a general failure of whatever policy the Americans had attempted and a resurgence of British allegiance. The moving factor in the war in the Northwest was the labor of traders who subverted American authority before the war and were only too eager to flout it once the war began. Prairie du Chien, that perennial center of trade activity, was also a center for war. The Americans fortified it in 1814 by erecting Ft. Shelby there, a log fort of no great pretensions (Oerichbauer 1976: 80), but nevertheless it was a provocation to the British, who captured it and held it to the end of the war. The military success of the British in the Mississippi Valley was testimony to the work of the traders in enlisting the interest of the Indians on the British side (Jackson 1961). Robert Dickson put as much energy into supporting the British as ever he did into his fur trading business (Gilman 1974: 13) and was a leading figure in the war far beyond his own area. Even the Dakota, an uncertain ally at the best of times, supported the British side (Meyer 1967: 28-29).

Most of the action of the War of 1812 took place east of the Mississippi Valley, but the war itself badly affected the trade. Although the British controlled the water route via the Wisconsin to Mackinac, there were grave problems in Indian relations between the Mississippi River and Lake Michigan. Central Algonkian Indians such as the Potawatomi were adherents of the Shawnee Prophet and his brother Tecumseh (Clifton 1977: 202-216), and, although committed in general to the British cause, they wavered in their loyalty. Besides, a winter of warfare and raiding left little time for fur gathering. The complex job of balancing Indian allegiances, encouraging the trade, and carrying on a war was clearly an impossible task.

The end of the war brought evacuation of the British at last from the Upper Mississippi Valley trade, and the Americans acted quickly to secure the region. The fort at Prairie du Chien had been burned by the British as they left, and the Americans erected a new one, old Ft. Crawford, on the same spot (Oerichbauer 1976: 82). Ft. Crawford was more than a military post. A government trading factory was added to it and to other forts in an attempt to gain some control over the fur trade. Official government trading posts were sufficiently successful as to pose problems for Jacob Astor and his American Fur Company on its way to becoming the important monopoly in the Mississippi Valley trade (Gilman 1974: 17). The trade changed in other ways, too. Fur continued to go via Mackinac, but after the War of 1812, it was Prairie du Chien that served instead as a primary distribution point for manufactured goods. St. Louis, once the headquarters of the Spanish military, became the great supplier for the trade; goods could easily move up the river by steamboat, an easier means than the Wisconsin-Fox route with its often awkward portages.

The last days of the fur trade on the Upper Mississippi came after 1842 when the American Fur Company failed, and the remnants were pieced together by Hercules Dousman (Gilman 1974: 17). His house, Villa Louis, is a principal ornament of modern Prairie du Chien, but it is representative of a fur trade in eclipse, of the decadent days of a once lively and immensely profitable activity whose major focus had forever passed beyond the Upper Mississippi Valley.

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HISTORY OF AMERICAN SETTLEMENT IN THE UPPER MISSISSIPPI VALLEY

1805 TO PRESENT

AMERICAN EXPLORATION

Following the Louisiana Purchase of 1803, which more than doubled the area of the United States, efforts were made by the American government to explore the vast expanse of territory that stretched between the Mississippi River and the Rocky Mountains. The first of these explorations in the Upper Mississippi Valley was the Zebulon M. Pike expedition of 1805-1806 (Pike 1811, Coues 1956, Jackson 1966). Lieutenant Pike, accompanied by twenty men, ascended the Mississippi River from St. Louis in the spring of 1805 faced with the task of negotiating treaties with the Indians, securing conformity with the laws of the United States by fur traders in the region, selecting potential sites for American forts, and extending geographical exploration. Although Pike failed in getting British trappers to comply with government policies regarding the fur trade, he successfully negotiated a treaty with the Dakota for a large tract of land immediately west of the Falls of St. Anthony and at the strategic confluence of the Mississippi and St. Peter's (Minnesota) Rivers for the establishment of a military outpost - the future site of Fort Snelling.

Pike's exploratory mission in 1805 was followed by a second government expedition in 1817. This expedition was under the command of Major Stephen H. Long, who ascended the Mississippi in a six-oared skiff as far as the Falls of St. Anthony. In his journal, Long describes the scenery, his meetings with Wabasha's band of Dakota at or near the present site of Winona, and early settlement along the river. At Prairie du Chien, for example, Long describes its inhabitants as principally of French and Indian extraction (Long 1889: 61-63).

Long returned in 1823, accompanied by the geologist William H. Keating. This expedition ascended the Mississippi as far as Fort Snelling, then headed up the St. Peter's and Red Rivers before turning east along the international boundary. The expedition was joined at Fort Snelling by the Italian explorer Giacomo Beltrami, who left the party near Pembina in his search for the source of the Mississippi. Keating's narrative (1959) of the voyage is particularly noteworthy for its descriptions of the scenery and the Indians living along the region's waterways.

The Pike and Long expeditions marked the beginning of the passage of several explorers, soldiers, and surveyors into the Upper Mississippi region via the "Father of Waters" and its tributaries. Some of the more notable expeditions that passed through the region in the ensuing years were those led by Colonel Henry Leavenworth in 1819 to establish a permanent military outpost at the confluence of the Mississippi-Minnesota Rivers, as recommended in earlier reports by Pike and Long; Schoolcraft in 1820 and 1832 to discover the source of the Mississippi River;

and Lieutenant-Colonel Stephen Kearny, accompanied by the topographer Albert M. Lea, in 1820 and again in 1835 to explore and map the interior parts of "Iowaland".

Between 1835 and 1850 extensive scientific and geological surveys were conducted in the Upper Mississippi Valley. The earliest geological surveys in the Study Area were conducted by the British geologist George W. Featherstonhaugh in 1835 and by the geographer Joseph N. Nicollet, who travelled extensively throughout the region from 1836-1839 while preparing an illustrative map of the hydrographical basin of the Upper Mississippi region. Important surveys were also performed by the geologist David Dale Owen, who conducted the first detailed surveys of the lead districts of Wisconsin, Illinois, and Iowa in 1839, the Chippewa land district of Wisconsin and northern Iowa in 1847, and a three year survey of the mineral deposits of Wisconsin, Iowa, and Minnesota, beginning in 1848. The geological surveys conducted during the 1830s and 1840s by John Locke, William H. Bell, Joseph Le Conte, and John Pope contributed to the knowledge of the region's mineral wealth, topography, and fluvial features.

The government survey reports and maps prepared by the early topographers and geologists (Schoolcraft 1821, 1834; Featherstonhaugh 1836; Lea 1836; Owen 1840, 1848a, 1848b; Nicollet 1843; Locke 1844; Bell 1844; Pope 1855) were widely circulated and consulted by later surveyors, settlers, and travellers. The works of Schoolcraft and Nicollet are particularly significant since they contain some of the first truly scientific ethnographic notes on Native American groups residing in the Upper Mississippi region.

THE MILITARY FRONTIER

The early American explorations into the Upper Mississippi Valley and the outbreak of war with Great Britain in 1812 served to further convince the United States government of the need to develop a stronger military presence in the region and to control the routes used by American and British fur traders to reach the Indians residing on American territory. To accomplish this end, garrisons were posted and forts built at Detroit, Chicago, Mackinac, Green Bay, Rock Island, and elsewhere to protect the northwestern frontier (Nesbit 1973: 81). Two permanent military frontier outposts were established along the Mississippi River within the Study Area - Fort Crawford located on an island at Prairie du Chien in 1816, built on the site of Fort Shelby which was captured by the British during the War of 1812 and renamed Fort McKay (Mahan 1961), and Fort Snelling located on high ground near the mouth of the Minnesota River in 1819 (Hansen 1958). In 1828, due to problems of frequent flooding, the site of Fort Crawford was abandoned and a new fort was erected on a commanding elevation on the prairie above the rise of the river, but easily accessible to a landing for boats.

The early military forts became the first urban centers of the region and fostered a period of much activity. Many an enlisted man found himself engaged in building roads and bridges, farming, cutting lumber, and the like. Timber was cut at or near the forts for use in the construction and frequent repair of stockade walls and buildings and as fuel for the fort's cooking ovens. To facilitate this, waterpowered sawmills were built for sawing lumber for use at the fort. Three government-built waterpowered sawmills are known to exist within or near the Study Area - one built on the Black River in 1819, one at the Falls of St. Anthony in 1821, and one located three miles up the Yellow River across from Prairie du Chien in 1828.

The garrisons stationed at the forts in the Upper Mississippi region were dependent on the regular arrivals of foodstuffs, munitions, and supplies sent upstream from St. Louis by keel-boat, barge, and, in latter years, by steamboat. Practically everything that was needed at the forts, from buttons and sewing needles to salt port and flour, was secured through these scheduled arrivals.

Life at the frontier outposts, however, was not easy. Sickness and disease were widespread and epidemics of smallpox, cholera, scurvy, and malaria, while common among the soldiers, were particularly devastating to the local Indian populations living nearby (Harstad 1959-60, 1960a, 1960b, 1963). Adding to the soldier's misery and discomfort were long, bitter cold winters, seasonal floods, and the constant threat of attack, either real or imagined, by hostile Indians.

By the 1820's, the American government had succeeded in extending its military presence throughout the upper Mississippi region for the purpose of enforcing its Indian policies and regulating the fur trade. In doing so, the military played an important pioneering role in the settlement of the frontier. The protection afforded by the frontier forts attracted the first permanent American settlers composed, for the most part, of discharged officers and enlisted men and their families, voyageurs, and Indian agents. It was the military that first surveyed the rivers and lakes, improved river navigation, built dams and mills, and served as the first political and judicial centers in the region (Prucha 1953). The presence of the military, particularly the officers and their families, also helped set the social tone of the early settlements by promoting education and religion and by hosting social gatherings (Nesbit 1973: 84).

The relationship between a military fort and the community which developed around or near it was an intimate one, although the two did not always share the same social or economic goals. This was particularly true as the first influx of Euro-American settlers began arriving in the Upper Mississippi Valley during the 1820's.

LEAD MINING

During the 1820's there appeared on the frontier a new class of American settler - the pioneer lead miner. Spurred by published newspaper notices in the papers of St. Louis and elsewhere, concerning the wealth of the lead mines of the Upper Mississippi, thousands of speculators entered the lead region at Galena, Illinois with the hope of striking it rich in the lead veins of southwestern Wisconsin, northwestern Illinois, and eastern Iowa. The penetration of the lead miners into the prairies and hinterlands of the frontier laid the foundation of a new pattern of Euro-American settlement that was to last well into the late nineteenth century.

The principal centers of the Upper Mississippi lead mining district were located south of the Study Area: Galena on the east side of the river, Dubuque on the west side of the river, and Mineral Point in the heartland of the Wisconsin diggings. River towns such as Prairie du Chien and Guttenberg located on the northern margins of the lead district also participated in the mining and business activities associated with the lead industry.

The area around Prairie La Porte (Guttenberg) on the Iowa side of the river was the focus of concentrated mining efforts. The lead ore found in this area was of a high grade, being composed of up to 82% pure lead. The lead deposits in this area ran in narrow horizontal veins which were more difficult to work than the perpendicular seams in the region around Dubuque and Mineral Point. Although never a major industry, an estimated one million pounds of lead were mined here during the lead mining era and two smelters were in operation along Miner's Creek by 1858 (Jacobsen 1979: 1). Lead mining apparently never brought great wealth to the town and resulted in the loss of several personal fortunes (Jacobsen 1979).

The arrival of lead miners in the region brought rapid economic development. Small towns grew where miners settled and farming began around the mines to provide basic foodstuffs for the mining population and to diminish the need for outside supplies (Nesbit 1973: 115). The lead mining period also witnessed some of the most ingenious schemes to transport lead to markets by way of proposed canals, waterways, roads, and railroads. Many of these promotions, however, never materialized. Easy access to markets, however, continued to be a primary concern among mining communities, which began agitating for improved navigation on the Mississippi and along some of its tributaries so that lead could be shipped more efficiently and economically down river to New Orleans and up the Ohio to Eastern markets.

The depletion of many of the region's lead mines, a scarcity of manpower caused by the feverish California gold rush of the late 1840's, and an eventual decline in the price of lead following the Panic of 1857 brought an end to mining on

a large-scale in the Upper Mississippi Valley. After 1860, the nature of lead mining changed dramatically. Though some lead mining continued, post-Civil War efforts focused on different minerals, primarily zinc, and used more capital intensive mining techniques. A resurgence of mining activity occurred in some areas such as Guttenberg around the turn of the century but was short-lived. Active mining operations in the Upper Mississippi lead-zinc district, however, continued until 1979 when the last operating underground metal mines in Wisconsin were closed (Hill and Evans 1980: 13).

EARLY SETTLEMENT, ORGANIZATION, AND STATEHOOD

The influx of lead miners and farmers into the Upper Mississippi Valley during the 1820s, 1830s, and 1840s led to the accelerated cession of lands by various Native Indian groups in Wisconsin, Iowa, and Minnesota and undoubtedly contributed to the outbreak of the Winnebago War of 1827 and the Black Hawk War of 1832 (Wilgus 1927: 403). The final "battle" of the latter incident took place within the Study Area near the mouth of the Bad Axe River in Vernon County, Wisconsin.

The suppression of these outbreaks of Indian hostility, however justified, by the military and militia opened up the lead region and the Upper Mississippi to increased Euro-American settlement. Interest in Wisconsin land was so great immediately following the Black Hawk War, for example, that land offices were opened in 1834 at Mineral Point and Green Bay for the auction of newly surveyed lands (Nesbit 1973: 112). This pattern of settlement was repeated across the river in Iowa following the cession of Sac and Fox lands in 1832, the removal of the Winnebago from the Neutral Grounds by 1848, and in Minnesota following the Sioux land cessions during the 1850s. Between 1836 and 1857 other land offices had been established at Burlington, Dubuque, Brownsville, Winona, La Crosse, Red Wing, Stillwater, and Minneapolis.

As government surveyors, land speculators, farmers and entrepreneurs poured into the Upper Mississippi Valley by various routes (Fig. 2), the need to organize the region into territories for civil, political, and judicial purposes, as set forth in the Northwest Ordinance of 1787, was realized. The desire for territorial status, however, was far from universal, especially among fur traders in the region who saw no advantages to further government regulations and the removal of Indians to western lands across the Mississippi.

Under the personal and political influence of men like Henry Dodge and James Doty in Wisconsin, Robert Lucas in Iowa, and Alexander Ramsey and Henry Sibley in Minnesota, territorial governments were formed in the region as the number of settlers

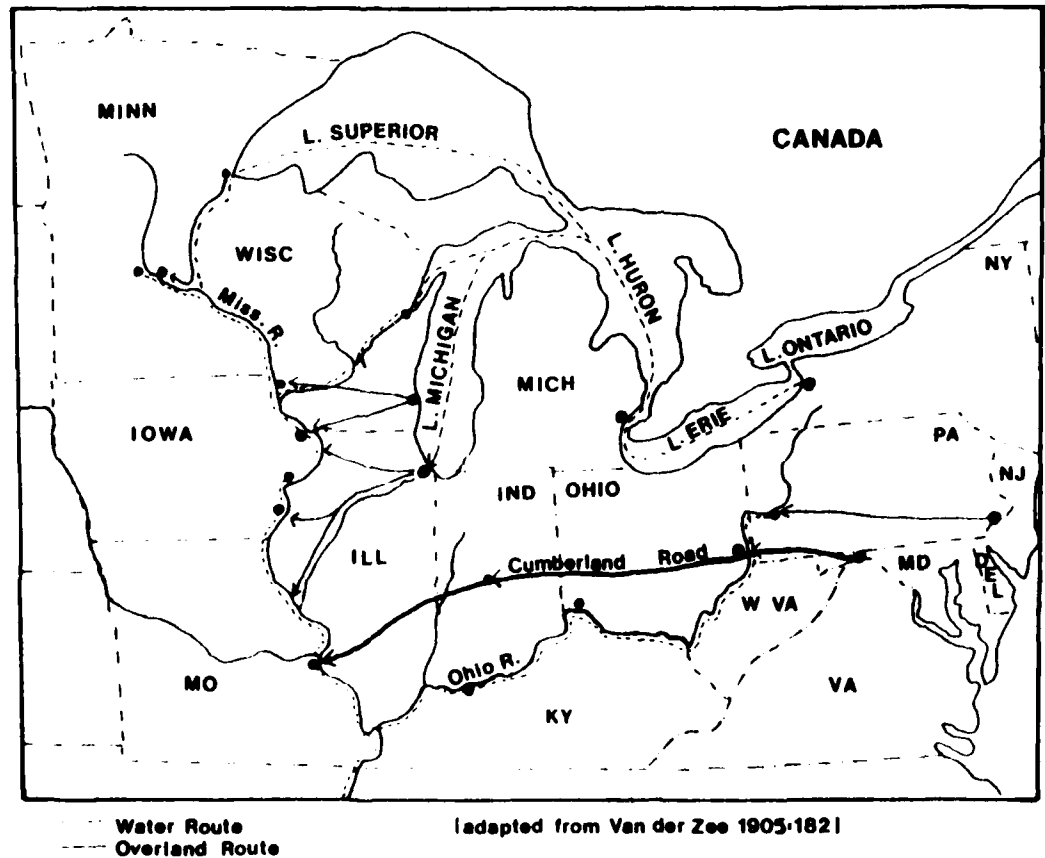
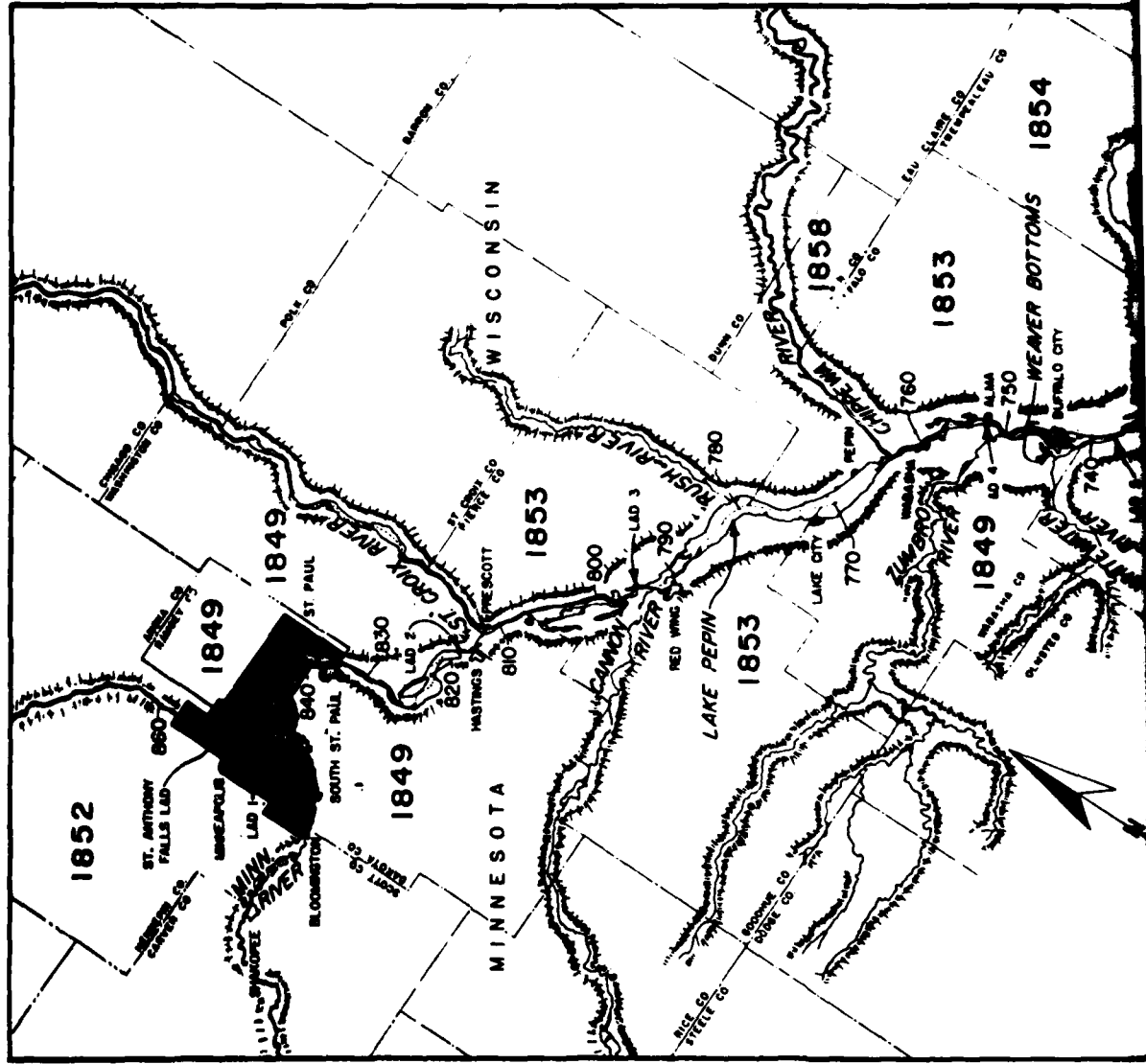
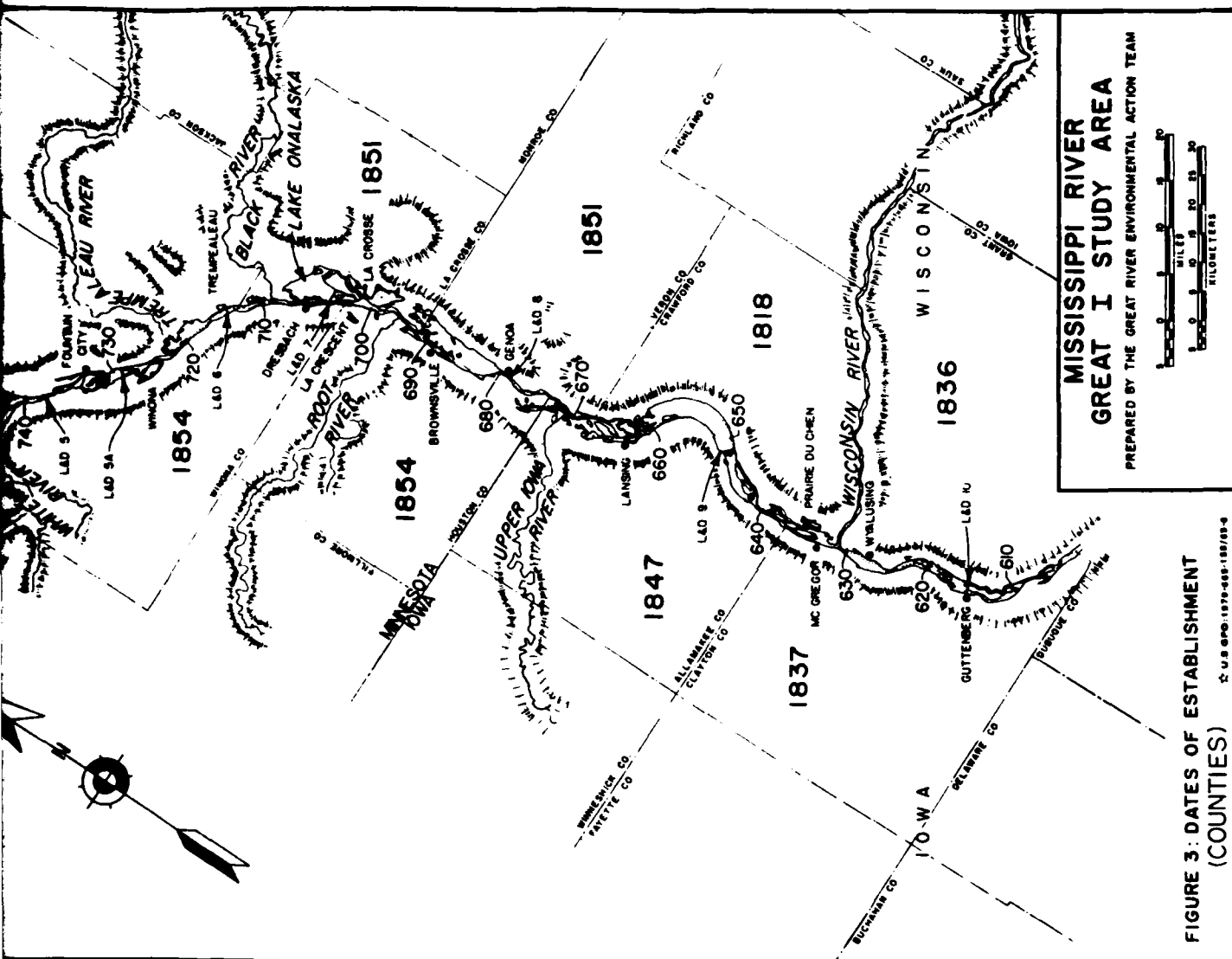


FIGURE 2: EARLY LAND AND WATER ROUTES LEADING
TO THE UPPER MISSISSIPPI RIVER VALLEY

in these areas increased. The Wisconsin Territory, as formed in 1836 from Michigan Territory, included both present-day Iowa and Minnesota. The organization of Iowa Territory followed in 1838, with Iowa statehood in 1846. Wisconsin attained statehood in 1848. The organization of Minnesota Territory followed in 1849, Minnesota became a state in 1859. The establishment of individual counties bordering the Mississippi River within the Study Area is shown in Fig. 3. The work of the territorial and early state governments was largely concerned with plans to settle and develop the land and exploit its natural resources.





**FIGURE 3: DATES OF ESTABLISHMENT
(COUNTIES)**

IMMIGRATION AND SETTLEMENT

The westward movement of immigrants and settlers across the United States during the 1850s and 1860s brought a continuous stream of new arrivals in the Upper Mississippi Valley. Between 1850 and 1860, for example, the population in Iowa increased by 251%, while the population in neighboring Minnesota skyrocketed by over 2730% (Clark 1914:213).

The rush of settlers into the region was facilitated by the completion of the railroad to several points along the Mississippi River and by advertisements published in Eastern and foreign newspapers which contained glowing accounts of the beauty and advantages of living in the Upper Midwest. Those fortunate to own homes in Wisconsin, Iowa, and Minnesota also wrote enthusiastic letters to their relatives and former neighbors urging them to come and share in their prosperity (Clark 1914:215).

Foreign emigration to the Upper Mississippi Valley was particularly heavy during the years 1850-1890. Aggressive and well-planned efforts were implemented by all of the states in the Study Area to draw immigrant groups, particularly from Germany, Norway, and Sweden (Gregory 1901; Hansen 1921; Appel and Blegen 1923). The state of Wisconsin officially began the movement by establishing an Office of Emigration in New York City in 1852 (Blegen 1919:4). Similar offices were established by Iowa in 1860 and Minnesota in 1864. Competition among the state agencies was strong and was particularly spirited among railroad and steamboat agents. Numerous pamphlets, guides, and pocket maps were published during these years to lure immigrants to the region (Peck 1836; Curtis 1852; Colton 1854; Lapham 1867).

Several immigrant-aid societies and claim associations were also organized to bring settlers into the region. Hundreds of German immigrants, for example, came to Guttenberg, Iowa in 1845 and to Buffalo County, Wisconsin in 1856 under the auspices of the Western Settlement Society of Cincinnati. The village of Minnesota City in Winona County was platted in 1852 for the Western Farm and Village Association, a colony of settlers from New York (Upham 1969:582).

The imprint of foreign emigration in the Upper Mississippi Valley remains today. Many cities, towns, and counties in the Study Area still retain a distinctive ethnic identity, including German (Guttenberg, Iowa and Buffalo County, Wisconsin); Norwegian (Southeast Minnesota and La Crosse and Vernon Counties, Wisconsin); Swedish (Stockholm in Pepin County, Wisconsin); Polish (Winona, Minnesota); Italian (Genoa in Vernon County, Wisconsin); and Irish (Wexford in Allamakee County, Iowa and St. Paul, Minnesota).

AGRICULTURE AND MILLING

Many of the early pioneer settlers who arrived in the Upper Mississippi Valley in the nineteenth century came in search of a level farm site that could be easily cleared. After purchasing newly opened government lands along the river for \$1.25 an acre or staking out a claim on lands that were not yet open for sale, most farmers wasted little time in making "improvements" to the land. The required improvements included building a residence, which was usually of log construction, and clearing land for cultivation. The prairie grasses were broken with steel plows which allowed farmers to break through the tough prairie sod for the first season of cultivation. Corn or potatoes were usually the first crops planted, providing the farmer and his family a source of food over the winter, followed by wheat the following spring. The fencing of fields and livestock pens was begun as soon as crops were planted.

Between the years 1830 and 1890 the primary cash crop of the region was wheat. Wheat-growing was attractive to the pioneer farmer since it required small cash outlays with which to begin farming, stored well, and turned a small profit with which to purchase supplies and make further improvements to the land. The early development of grain cutting machinery, particularly the McCormick reaper in 1848, made wheat harvesting easier and also more economical. During the 1860s before grain agriculture spread westward into Iowa and Minnesota, Wisconsin was the leading wheat-producing state (Nesbit 1973:181).

The history of flour milling in the Upper Mississippi Valley is directly tied to the development and decline of wheat-growing. As more and more acres of wheat came into cultivation, the number of grist mills needed for grinding and processing locally raised wheat into flour to make bread also increased. By the 1870s there were close to 2,000 mills in Iowa alone. Many of these were located along swift flowing rivers in Allamakee, Clayton, and Dubuque Counties bordering the Mississippi River (Swisher 1940). The flour milling industry caused a boon to barrel manufacturers, whose numbers also increased during this period, since the mills required thousands of wood barrels to ship the flour in to market.

Nowhere was there a better source of water power than at the Falls of St. Anthony, the only major waterfall in the entire course of the Mississippi River. The first grist mill in Minnesota was built here on the west side of the falls in 1821-1822 by soldiers from Fort Snelling (Kane 1966:9). By 1890 the Falls District had become the center of flour milling in the region and the world where 24 flour mills were in operation producing more than 7 million barrels of flour annually (Bjornsd 1969:314). Although some milling was done in towns along the Mississippi River in Wisconsin, it never reached the importance that it held for neighboring Iowa and Minnesota.

The Mississippi River played an important role in the early history of wheat-growing and milling. With a poor network of roads in the region, the river provided an easy and efficient route to markets and mills. River towns such as McGregor, Winona, Red Wing, Hastings, and La Crosse became major grain shipping centers of the region. At McGregor in 1865, for example, it was a common sight to see over a thousand wagon loads of wheat clogging the streets of the "Pocket City" - some brought in from points as far as 200 miles to the west - awaiting purchase by grain buyers such as Joseph "Diamond Jo" Reynolds who made their headquarters there (The Federal Writers' Project 1938:11). Large shipments of grain and flour were transported downriver by steamboat from McGregor and from virtually every river town during this period.

As railroads replaced steamboats as the dominant means of transporting wheat in the region, river ports such as Prairie du Chien and La Crosse became major collecting points for shipments of wheat by rail to Milwaukee and Chicago. The establishment of railroads into western Minnesota and the Dakotas which brought new wheat eastward was largely responsible for making the Falls District in Minneapolis the flour milling center of the world (Bjornson 1969:302).

The reign of "King Wheat", however, was not to last forever, as continuous plantings of wheat soon depleted the soil. Diseases such as smut and rust and devastating infestations by grasshoppers and chinch bugs in the older wheat growing areas also added to its demise. Faced with declining wheat yields in Wisconsin and elsewhere, many farmers moved westward across the Mississippi River into Iowa, Minnesota, and the Dakotas during the 1860s - 1880s.

The decline of wheat-growing in the region during the late nineteenth century was accompanied by the development of a diversified agricultural economy based on dairy farming in Wisconsin and corn agriculture and livestock breeding, particularly hogs and beef cattle, on farms in Iowa and Minnesota. Today, these agricultural pursuits and the growing of oats, potatoes, barley, and soybeans provide the main source of farm income in the region.

The St. Anthony Falls Historic District in Minneapolis contains by far the largest concentration of commercial buildings relating to the early history of agriculture and milling in the Study Area. Particularly noteworthy are the large Washburn and Pillsbury "A" mills erected at the Falls in 1878 and 1881, respectively.

Early agricultural and milling sites outside of the Falls District, for the most part, include the ruins of old mills. The stone ruins of the Old Ramsey mill built in 1857 along the Vermillion River in Hastings is but one example. Virtually every town had a grist mill, as indicated by the early histories of the region. No systematic survey of early mills has been conducted in the region, although many mills, particularly in

Iowa (Orr 1940, Swisher 1940), are known to exist. Most of these sites have also never been field checked.

The modern milling and grain storage facilities in Hastings, Red Wing, and the Twin Cities attest to the continued importance of wheat agriculture in the region today. Most of the wheat today, however, comes from western Minnesota and the Dakotas. Millions of tons of grain are hauled out of the Upper Mississippi Valley each year by rail, truck, river barge, and grain freighters.

EARLY LAND TRANSPORTATION ROUTES

The earliest overland roads in Wisconsin, Iowa, and Minnesota were the military roads built by soldiers and army engineers. The Military Road, built in Wisconsin from 1835-1838 by garrisons stationed at Forts Howard, Winnebago, and Crawford, linked Green Bay and Prairie du Chien (Cole 1925:50). A connecting road from Fort Crawford to Fort Atkinson via McGregor, Iowa was constructed in 1840. These early military roads form the present-day route of U.S. Highway 18. From 1842 to 1845, soldiers also constructed a road through Wisconsin from Green Bay to Fort Snelling. Between 1847 and 1857 the army surveyed and built four military roads in Minnesota. Three of these roads terminated at or near St. Paul: the Big Sioux River Road (Mendota to Mankato), the Fort Ripley Road (St. Paul to Fort Ripley), and the Wabasha Road (Mendota to Wabasha) (Merritt 1979:30-31). The fourth road, the St. Louis Road, started from Point Douglas at the confluence of the Mississippi and St. Croix Rivers and ran north to Lake Superior.

The growth of settlements along both banks of the Mississippi brought a flood of demands for more and better roads. During the 1850s and 1860s many roads were constructed in the Upper Mississippi Valley. By 1860, overland stage coaches carrying mail and passengers ran on a regular basis between St. Paul and Dubuque and from many river towns towards settlements in the east and west (Larsen 1930:401-402). Roundabout routes, lack of sufficient bridges, and the frequently impassable conditions of the roads were common features of the early overland routes in the region.

The granting of government licenses to operate ferry boats across the Mississippi River helped establish more direct and efficient lines of travel and communication in the region. Early ferries were established at Dubuque, Cassville, Glen Haven, Prairie du Chien, Lynxville, Perryville, Victory, La Crosse, Winona, Trempealeau, Read's Landing, Lake Pepin, Prescott and above the Falls of St. Anthony. Thousand of wagons, carrying settlers and immigrants headed west, crossed the river by ferry. Schafer (1938:454) records that in 1851, the wagon road leading to the ferry established by Alexander MacGregor below the mouth

of the Wisconsin was so crowded with settlers that wagons were stopped nine to ten miles back from the river - undoubtedly the region's first recorded traffic jam. Part of this old Wagon Road is still visible in Wyalusing State Park.

As land and railroad bridges were built across the Mississippi River, the need for ferry boats diminished. The first land bridge across the river was a suspension bridge built between St. Anthony and Minneapolis by Franklin Steele in 1854. The opening of this bridge in 1855 was greeted with much celebration and marked the beginning of the development of a single manufacturing center at the Falls (Kane 1966:40). The construction of railroad bridges across the Mississippi River soon followed. The first railroad bridge to span the river was built at Rock Island in 1856.

By the end of the 1870s several wagon and railroad bridges across the Mississippi River had been built. The construction of bridges helped shape settlement patterns and the economies of the towns in which they were located. It was also marked by intense rivalries which sometimes lasted for years. The rivalry between railroad interests in Winona and LaCrosse during the 1870s, for example, was spurred by the need to bridge the Mississippi and secure the routing of grain to market (Hirschheimer 1942:33).

Nearly all of the old wagon and early railroad bridges across the Mississippi River have disappeared. Many of these bridges were important architectural and engineering feats of the day. The Suspension Bridge (1854-75) above the Falls of St. Anthony, the unique Spiral Bridge (1895-1951) at Hastings (Jacobsen 1976), and the pontoon railroad bridge-crossing (1899-1961) at Prairie du Chien (Miller 1942) are perhaps the most famous. One of the oldest remaining bridges in the Study Area is the Stone Arch Bridge (1882-83) built below the Falls of St. Anthony in Minneapolis. Additional information on this and other railroad bridges will be discussed in a later section.

Today, several highway and railroad bridges span the Upper Mississippi River and its tributaries. In the Study Area six highway bridges cross the Mississippi between Minnesota and Wisconsin, while another two span the river between Iowa and Wisconsin. Many other bridges are located in the Minneapolis and St. Paul metropolitan area.

No comprehensive studies of highway and railroad bridges across the Mississippi have been conducted in the Study Area. Some efforts are being made along these lines, however. The Minnesota Department of Transportation, for example, currently has a bridge survey in progress. The Wisconsin Department of Transportation and the Historic Preservation Division, State Historical Society of Wisconsin has formed a Historic Bridge Evaluation Committee to review and evaluate selected highway bridges in the State. Minnesota, Iowa, and Wisconsin all have recorded bridges in their state inventory files.

STEAMBOAT NAVIGATION ON THE UPPER MISSISSIPPI

The first steamboat to ascend the upper reaches of the Mississippi was the Virginia, which arrived at Fort Snelling in 1823. The only passengers on board were Major Taliaferro, Indian agent at the fort, the Italian explorer Giacomo Beltrami, a Sac Indian chief, an unnamed woman missionary, and a Kentucky family bound for the lead mines near Galena (Peterson 1946:289-290).

The erection of military forts and trading posts at various points along the river required a gradual increase in the number of visits made by steamboats which brought in troops and supplies. Steamboats under government charter continued to make annual trips to Fort Snelling up to 1842 only because there were no boats on the river above Galena and Cassville which were independently engaged in the steamboat river trade (Merrick and Tibbals 1911:110).

The era of steamboating on the Upper Mississippi which followed the voyage of the Virginia witnessed many stages of development--each with its own history. For sake of convenience, the six distinct periods established by the noted steamboat historian, William J. Petersen (1946:293-295), will be used, with some modifications, to present a thematic history of the history of steamboating on the Upper Mississippi.

- 1) The lead period, 1828-1848.
The lead mines furnished an important downstream cargo to the steamboats which brought most of the supplies for the rapidly increasing mining populations at Galena, Dubuque, and Helena, a lead shot tower community on the Wisconsin River. Petersen (1946:293) states that more than 472 million pounds of lead valued at over \$14 million were shipped down river by Mississippi steamboats during this period.
- 2) Immigration and settlement, 1849-1870.
The impetus given by the opening of Indian lands to Euro-American settlement and the rise of lumbering on the Black, Chippew, and St. Croix Rivers caused a rapid growth in steamboat traffic above the mouth of the Wisconsin River. Hundreds of settlers, both native and foreign born, arrived in the region by steamboat. The period of the 1850s, in particular, witnessed a rush of settlers into the region. During these years the number of recorded steamboat arrivals in St. Paul, for example, sometimes ran more than a thousand in a single season (Blegen 1939: 387).

A unique manifestation of the 1840s and 1850s was the development of the "fashionable" or "grand" tours, which were luxury trips by steamboat on the Mississippi River. While short excursions were common, the most popular on the Upper Mississippi were the excursions from St. Louis, New Orleans, Pittsburgh, and elsewhere to Rock Island, Galena, Dubuque, Prairie du Chien,

Lake Pepin, St. Peters, and the Falls of St. Anthony (Blegen 1939:379).

Perhaps the most famous of the fashionable tours was one organized in 1854 by the owners of the Rock Island Railroad to celebrate the completion of the railroad to the Mississippi River (Petersen 1934, Blegen 1939, McDermott 1941, Babcock 1954). Part of the festivities included the chartering of seven steamboats to carry 1,200 invited guests from Rock Island to St. Paul. Among the guests on board were ex-President Millard Fillmore, accompanied by his daughter, and several prominent politicians, distinguished academicians, and noted journalists of the day. The trip was enlivened by receptions, music, and dancing.

News of this event spread among Easterners and Southerners by participants, who told their friends of the natural beauty of the scenery and the hospitality of the river townspeople along the way, and through published accounts in newspapers and magazines (Sedgwick 1944). Many took their friends' advice and came to the Upper Mississippi by steamboat during the years before the Civil War.

3) The grain period, 1860-1890.

During these active years on the river, large shipments of grain were transported downriver by steamboats. The Diamond Jo line of steamboats was established specifically for carrying heavy cargoes of grain southward. In 1861 three million bushels of wheat passed through McGregor alone (Quigley 1931:29).

4) Period of decline, 1890-1910.

The building of the railroad parallel to the river drastically reduced the volume of steamboat river trade. Many steamboat operations, in fact, virtually disappeared from the river. Brown (1919:424) cites other reasons for the collapse of steamboating. These include: a) the unusually short life span of a steamboat, which on the Upper Mississippi between 1823 and 1863 averaged only five years, due to fires, boiler explosions, and snags in the river; b) the irregularity of service; c) the instability of steamboat rates, which sometimes fluctuated by as much as 1000%; d) a poor understanding of economic principles in boat operations; and e) the lack of a good line organization, especially properly constructed terminals for handling freight and passengers.

5) Period of excursion boats, 1910-1927.

During these years steamboats reappeared on the river carrying tourists on pleasure trips up and down the river, reminiscent of the "fashionable tours" of earlier generations. Only one excursion steamboat line was based on the Mississippi River - the family-operated Streckfus line which began in 1911 in Rock Island, Illinois with the purchase of the last four remaining packets of the Diamond Jo Line (Meyer 1967).

6) Towboat era, 1927-present.

This period was ushered in by the establishment of the Federal Barge line service in 1927 and the nine-foot commercial navigation channel that resulted from the completion of the 26 locks and dams constructed on the river during the 1930s by the U. S. Army Corps of Engineers.

The era of steamboating on the Upper Mississippi is a colorful chapter of river history. Many old steamboat captains and river pilots have recalled their life experiences in written form (Gould 1889, Glazier 1891, McMaster 1893, Merrick 1909, Merrick and Tibbals 1912). The glamour and spirit of the "river days" has also been recaptured and preserved in the works by modern historians (Petersen 1937, Babcock 1926).

In addition to the written accounts, many vestiges of the steamboat era remain along the river between Guttenberg and the Falls of St. Anthony, although, to the author's knowledge, no systematic survey of these cultural resources has been conducted. Notable examples include the magnificent two-story red brick office building and residence of Joseph "Diamond Jo" Reynolds in McGregor, the Winona levee where over 1,700 steamboats once registered, and the submerged steamboat, the War Eagle, which burned and sank in the Black River at La Crosse in 1870.

Numerous residences and commercial buildings constructed during the mid-to late nineteenth century in river towns such as Guttenberg, McGregor, Lansing, Wabasha, Red Wing, Winona, Hastings, St. Paul, Prescott, Alma, Trempealeau, and La Crosse remain as visual reminders of this bygone era. Many of the buildings constructed during the steamboat era have been refurbished and restored to their original condition, providing a tangible link with the past. Numerous steamboat wrecks, structural navigation aids such as wing dams, and the sites of former river landings are also known to exist.

The destruction of the only remaining wood hulled stern steamboat, the Julius C. Wilkie, by fire at its berth in Winona in March of 1981 was an unfortunate loss of an important historic resource. Plans are currently underway by the Winona community to salvage some of the original equipment and rebuild the steamboat in Levee Park at the foot of Main Street.

THE COMING OF THE RAILROAD

A new era began in the Upper Mississippi Valley in the late 1850s and 1860s with the arrival of the railroad. Spurred by intense rivalries, promotional schemes, and generous land grants from state legislatures, the railroads pushed ever westward in their quest to freeze out the steamboats from the profitable grain trade.

During the 1850s the railroad reached the Mississippi River at several points in Illinois and Wisconsin, arriving at Rock Island in 1854, Dunleath (present-day East Dubuque) in 1855, Galena in 1856, Prairie du Chien in 1857, and La Crosse in 1858. Additional routes and connecting lines were built through the interiors of these states.

Railroad construction in Minnesota and Iowa during the 1860s and early 1870s was equally frantic. The first tracks in Minnesota were laid between St. Paul and St. Anthony in 1862 (Crooks 1905: 448). The railroad from St. Paul reached Hastings in 1869, Red Wing in 1870, Winona in 1871, and La Crescent in 1872 (Derleth 1948:289). A line was also built southward from Minneapolis via Mendota toward Iowa between 1865 and 1870 (Prosser 1966:12).

During the years 1863-64 a railroad was built from McGregor to Postville, Iowa. This line was extended northward into Minnesota in 1867. By 1870 the rail lines in central Iowa and Minnesota were linked, and for the first time it was possible to travel all the way from Minneapolis to Chicago and Milwaukee by rail (Prosser 1966: 12).

Railroad construction in Iowa also proceeded along the Mississippi River. Building northward from Dubuque, the railroad reached Guttenberg and McGregor in 1871. The "River Route" along the west bank of the river was completed in 1876 when the line from La Crescent was extended southward as far as McGregor. The line paralleling the east bank of the river from the Illinois border to Prescott, Wisconsin was completed in 1886 (Raney 1936:402).

Several early branch lines were built westward from the river towns in Iowa and Minnesota to haul grain to market. The Winona and St. Peter Railroad, for example, was built westward from Winona as early as 1862. Other lines were established at McGregor in 1864, Hokah in 1866, and at Wabasha in 1877. The Waukon and Mississippi branch line, built westward from Waukon Junction, Iowa in 1877, was used to haul iron ore (Rehder and Cook 1972).

The first railroad bridge to span the Mississippi River in the Study Area was completed between St. Paul and Mendota in 1869 (Prosser 1966:12). Several bridges across the river

followed (Table 4). Prior to the construction of these bridges, railroads had crossed the river at points such as Prairie du Chien, La Crosse, and Winona by barges which were established to shuttle railroad cars back and forth across the river. During the winter months tracks were laid across the frozen Mississippi River. The construction of draw bridges across the Mississippi was a constant source of aggravation to steamboat captains and river pilots.

The closing of the Mississippi River below the mouth of the Ohio during the Civil War came immediately after the completion of the railroads from Milwaukee to Prairie du Chien and La Crosse. Much of the grain trade, therefore, was directed by rail to the Great Lakes for shipment to Eastern markets (Fish 1907:211). Between 1860 and 1865, the volume of freight and grain shipped by rail from Prairie du Chien to Milwaukee increased by over sixteen fold (Reports of the Milwaukee and Mississippi Railway Company, as cited in Fish 1907:211). The establishment of east-west railroads, making Chicago and Milwaukee the centers of the grain trade instead of St. Louis and New Orleans, according to Petersen (1946:294), was the primary reason for the decline of the river grain trade.

As railroads replaced steamboats as the dominant mode of transportation in the Upper Mississippi Valley during the 1870s, they quickly began to shape urban and rural life, providing new opportunities and orientations for the region's inhabitants (Francaviglia 1972:58). In the process of expansion, the railroads helped open up millions of acres to agricultural settlement in the interiors of Wisconsin, Iowa, and Minnesota. Thousands of immigrants and settlers bought land adjacent to or near the rail corridors so as to be able to ship their farm products to market.

While the arrival and expansion of the railroad spelled economic doom and disaster for many river towns such as McGregor, it also brought new economic prosperity to others. Marquette, Prairie du Chien, La Crosse, Winona, St. Paul, and Minneapolis, in particular, all profited from being a part of the rail network. By 1900, the city of La Crosse, for example, was served by four railroads and had developed into the largest railroad center between Chicago and Minneapolis (Miller 1959:4).

Railroads operating in the Upper Mississippi Valley today continue to play an important role in the economic development of the region. The roar of north and south bound trains carrying grain, coal and other commodities along both sides of the river has become a common feature of the cultural landscape. As the number of commercial river barges on the Mississippi intensifies, however, the role of the railroads and the river will need to be further analyzed and, possibly, redefined.

Several vestiges of railroading in the Study Area remain today. The Stone Arch Bridge below the Falls of St. Anthony is a particularly unique historic site. The bridge, built by James J. Hill in 1882-1883, is the only stone arch bridge across the Mississippi River and is the oldest main line railroad bridge in the Northwest (Holmquist and Brookins 1972:36).

All of the other early railroad bridges built across the Mississippi in the Study Area have been dismantled after years of use. Those at Hastings, Winona, and La Crosse have been replaced by more modern structures. Some of the early railroad bridges in the Study Area have only recently been abandoned and removed. The pontoon railroad bridge-crossing at Prairie du Chien, for example, was not abandoned until 1961. An estimated 1 million railroad cars crossed the floating tracks here during its use (Donovan 1964b:183).

In addition to bridges, numerous railroad stations, depots, and freight houses remain in the Study Area. Many of these structures, however, are abandoned and in a state of disrepair, while others which still survive are used but no longer serve their original function. The Minnehaha Depot, built in the mid-1870s in Minneapolis, is a fine example of local efforts to preserve the architecture and history of the period.

TABLE 4
EARLY RAILROAD BRIDGES BUILT ACROSS THE MISSISSIPPI
RIVER IN THE STUDY AREA

<u>Location</u>	<u>Type of Bridge</u>	<u>Year</u>
Winona	draw bridge	1869-70
Hastings to Pt. Douglas	draw bridge	1870-71
Prairie du Chien to North McGregor	pontoon draw bridges	1874, 1885, and 1899
La Crosse to La Crescent	draw bridge	1875-76
Read's Landing below the mouth of Chippewa River	pontoon draw bridge	1882
Below the Falls of St. Anthony	stone arch bridge	1882-83

LUMBERING

Many of the settlers who arrived in the Upper Mississippi Valley by steamboat and rail between 1830 and 1910 came to work in the magnificent white pine forests of northern Wisconsin and Minnesota. The region contained not only a seemingly "endless" supply of timber, but also sufficient waterways for floating out logs to sawmills and market places.

The major tributaries of the Upper Mississippi divided the region into natural lumbering districts before railroads became important. In the Study Area logging activities were focused primarily along the Rum, Black, Chippewa, St. Croix, and Wisconsin Rivers. During the spring drives, millions of board feet of logs were floated downstream to sawmills.

Rafting on the Upper Mississippi and its tributaries began in the 1830s, reaching a peak of activity during the early 1890s. Rafts consisted of cut logs as well as sawed lumber. Both types of rafts floated downriver as far as St. Louis for distribution to the rapidly growing settlements on the treeless prairies of Illinois and the plains west of the Mississippi (Raney 1935:80; Fries 1942:23). After the Civil War rafts were pushed or towed downriver by steam tug. During the logging era, La Crosse became the headquarters for the largest fleet of raft boats on the river.

The largest log raft on the Mississippi was assembled at Lynxville in 1896. It was 1550 feet long and 260 feet wide, and contained over 2 million board feet of lumber. The largest lumber raft on the Mississippi originated on Lake St. Croix in 1901. Although smaller in size, 1430 feet long and 285 feet wide, it contained over nine million board feet of lumber - the equivalent load of 900 railroad cars (Fremling 1974:25). The last raft of lumber on the Upper Mississippi River came in 1915.

The floating of huge numbers of logs downriver required extensive rafting works to catch, sort, scale, and store logs. The largest and most famous of these rafting works was constructed at the mouth of the Chippewa River by the Beef Slough Manufacturing, Booming, Log Loading, and Transportation Company. Between 1867 and 1890 over five billion board feet of logs were rafted out of Beef Slough booms (Curtiss-Wedge 1919:54; Anderson-Sannes 1980:187).

As lumbering and rafting expanded, sawmills were built in virtually every town along the Upper Mississippi River and its tributaries. In the Study Area the largest sawmilling operations developed at La Crosse, Winona, and at the Falls of St. Anthony. The sawmills employed hundreds of laborers and stimulated the growth of many secondary businesses such as barrel-making, lath and shingle mills, furniture, sash, and moulding works, boat works, and hardware stores. Several other non-lumber businesses were established to provide services for the lumber camps.

The tremendous amounts of lumber sawed during these years was staggering. Between 1880 and 1890, the sawmills in the city of LaCrosse alone cut nearly 1 million board feet of lumber annually (Miller 1959:7). In 1885 sawmills in the ten river counties in eastern Iowa cut over 97% of the total amount of lumber sawed in the entire state (Belthus 1948:141).

Between 1900 and 1910, with the decline of the logging industry, many companies sold their land holdings and mills and moved west to exploit the Douglas fir and pine forests of the Pacific Northwest. Although some sawmills along the river remained open by converting to hardwood sawmill work, most sawmilling operations closed.

The departure of the lumberman and lumberjacks from the region caused many river towns such as Read's Landing, Minnesota and North Alma, Wisconsin to diminish in size and importance. River towns such as Winona and LaCrosse, which had developed diversified manufacturing economies, were better able to withstand the setback of the sawmill closings without permanent set-backs (Hirshheimer 1937: 79: Upper Mississippi River Interpretative Center 1979: 19).

Very few visual reminders of the logging era remain in the Study Area, the notable exception being the "river mansions" built by lumbermen, bankers, and merchants in river towns such as Winona and La Crosse during the late nineteenth century. Much of the legacy of the logging era is preserved in the personal reminiscences of raft pilots (Russell 1928; Blair 1930; Turner 1939, 1940) and lumberjacks (Vinette 1926; Crosby 1937). The story of lumbering in the region is also traced by modern historians (Belthus 1948; Larson; Fries 1951, Hidy, Hill, and Nevins 1963, Kohlmeyer 1972).

CLAMMING AND THE PEARL BUTTON INDUSTRY

As lumber manufacturing in the towns along the Upper Mississippi River was gradually slowing due to the diminishing supply of timber in the 1890s, a new commercial enterprise - the pearl button industry - was just beginning to take form. The use of mussel shells from the Upper Mississippi River for the making of freshwater pearl buttons begins with J. F. Boepple, a German immigrant, who launched the first button factory in 1891 in Muscatine, Iowa (Carlander 1954:49; Tempte 1968:3-5). By 1902, as the mussel beds in the Muscatine area became exhausted, clamming operations were extended southward into Missouri and northward into Minnesota and Wisconsin (Carlander 1954:41). Productive mussel beds in the Study Area that were exploited include those at Guttenberg, McGregor, Lansing, Prairie du Chien, Lynxville, Genoa, La Crosse, Trempealeau, Lake Pepin, Prescott, and as far north as St. Paul (Tempte 1968:7).

As interest in clamming and the button industry spread, hundreds of clammers drifted the river in their scows during the catch season, harvesting several species of clams. Tent cities of clam fishermen sprang up along the banks of the Mississippi River during the summer months, particular around Lansing, McGregor, Harpers Ferry, and Prairie du Chien.

Although there were several different methods of gathering clams, the most common was the use of "crowfoot" bars pulled by a small, flat-bottomed "john boat". During the winter months, when the ice on the river became thick enough, clamming was often done through the ice with "shoulder" and "scissor" rakes (Carlander 1954:42).

Once the clams were raked from the river bottom they were brought to shore and "boiled out" in crude, oblong tanks placed at convenient places on the islands or on shore, so as to separate the shell from the clam meat. The clam meat was often sold as bait to commercial fishermen or as feed to poultry and hog farmers.

Thousands of tons of mussel shells gathered by the clammers were sold to local button factories or shipped downriver to other concerns where they were cut into button "blanks", then drilled, and polished. Hundreds of men and women were hired by the button companies to grade, cut, and box the finished shell buttons for shipment by rail or barge to markets across the country.

Button factories and "saw works" were established in several river towns in the Study Area during the late 1890s and early 1900s, particularly along the river in what is now Pool 10. Prairie du Chien, for example, had one large button factory, the Chalmers Button Factory, and several small one and two-man cutting operations (Tempte 1972:31). In Lansing, Iowa three button works were built, the Turner Button Works, the Capoli Button Works, and the New Jersey Button Works (Hancock 1913: 466-467). The H. Chalmer Pearl Button Company was the first of three such plants established in Guttenberg (Jacobsen 1979:3). Many tons of mussel shells were also hauled downriver by barge to Iowa button factories in Clinton, Davenport, and Muscatine.

In addition to the market for shells, there was also a considerable trade in freshwater pearls. Most of the pearls were found while boiling out the shells that were to be sold to the button factories. Although freshwater pearls were considered inferior to saltwater pearls, individual pearls often sold for several hundred dollars. The famous "Genoa Pearl" found in 1903 sold for fifteen hundred dollars, and eventually went to England to become part of the crown jewel collection (Peacock 1958).

The center of pearl buying in the upper Mississippi region was at Prairie du Chien. During the heyday of clamming operations, there were 27 pearl buyers registered in the city, people from India, France, England, and various parts of the United States (Tempte 1968:17). There was such great competition among the pearl buyers for the finest gems that each dealer had agents along the river to provide information on those that were found. Stories of midnight dealings and overnight fortunes from this period are common.

Commercial river clamming, button cutting, and the buying and selling of freshwater pearls played an important part of the economy of the region for nearly three decades. During the 1930s and 1940s, however, the advent of cheaper plastic buttons and dwindling supplies of mussels finally brought a halt to the pearl button industry. For the next two decades virtually the only reminders of this once-thriving industry were the crumbling piles of shells along the river's banks.

During the late 1960s a sudden revival of clamming on the Upper Mississippi River was caused by the Japanese cultured pearl industry which created a new market for dried mussel shells. The Japanese used the freshwater mussel shells for processing into round pellets which were then inserted into saltwater oysters for producing pearls (Finke 1966:27). Unlike previous clamming practices, only the larger shells of just a few species were bought for this purpose (Mathiak 1979:7). Thousands of tons of clam shells taken from the river were shipped from Prairie du Chien during these years.

It is not likely that commercial mussel fishing in the Upper Mississippi River will ever reach the major proportions that it did at the turn of the century. The navigation locks and dams built by the U.S. Army Corps of Engineers during the 1930s have slowed down the river current and silt deposits have smothered many formerly productive beds. Pollution in the river has also damaged many of the mussels which are sensitive to changes in water quality. Nevertheless, clamming remains an important source of income for many residents along the river.

Several historic clamming sites, shell heaps, and buildings which formerly housed button factories are located in the Study Area, particularly in Guttenberg, Lansing, and the Prairie du Chien-McGregor vicinity. The Red House Landing site, a late 19th and early 20th century clamming station located on the Iowa side of the river near Marquette, is an important historic site that is being severely impacted by wave action and periodic fluctuations in pool levels.

THE UPPER MISSISSIPPI RIVER: AN EPILOGUE

During the past 300 years of recorded history, man's relationship with the Upper Mississippi River has changed from one of a traveler on its meandering waterways to a controller of its ebb and flow. The development of this relationship can be summarized in four stages:

- 1) 1673-1820, The Wilderness River.
For nearly two centuries following the discovery of the Upper Mississippi River by Marquette and Joliet in 1673, the river and its tributaries served as water highways carrying fur traders, explorers, lead miners, and settlers into the region. The Mississippi River also fostered the early settlement of the region.
- 2) 1820-1870, The Improved River.
During this stage, the first attempts were made to improve the Upper Mississippi River for steamboat navigation. Snags, rocks, fallen trees, and sand bars were cleared from areas in the river which obstructed river traffic and made navigation hazardous.
- 3) 1870-1930, The Altered River.
This state was marked by intensified river improvements and began in 1870 with the clearing of the rapids at Davenport and Keokuk, Iowa. Further alterations of the river's natural course followed the authorization of a four and one half-foot channel in 1878 and a six-foot channel in 1907. These navigation channels were accomplished by snag and sand bar removal, the construction of wing dams and shoreline protection devices, and by maintenance dredging.
- 4) 1930 to date, The Controlled River.
The passage of the Rivers and Harbors Act of 1930, which authorized the construction of a nine-foot channel on the Upper Mississippi River through the creation of a series of locks and dams, added a whole dimension to man's relationship with the Great River. The dams and the impoundments of water behind them affected the function of many river towns and changed the face of the natural and cultural landscape. The impact of man on the ecology and archaeology of the Upper Mississippi River Valley is well documented (Claflin 1972; Fremling 1974; Gramman 1982).

Today, the Upper Mississippi River no longer is a free flowing river. Since the 1930s, the Mississippi has been transformed from a natural meandering waterway in the wilderness into a channelized canal carrying steel barges through the economic heartland of America. The future history of the region will undoubtedly be the future history of the river. Its destiny no longer belongs to those who shaped its past.

CHRONOLOGY OF HISTORICAL ARCHAEOLOGICAL RESEARCH

Nearly fifty years have passed since the late Leland R. Cooper, under the auspices of the Works Progress Administration, conducted archaeological investigations at the Fort Shelby-McKay-Crawford locus at Prairie du Chien. While much of Cooper's work is unpublished, displays of artifacts and photographic records of his investigations play a major theme at the museum on the Fort Crawford grounds. The following table provides a chronology of archaeological investigations at historic sites throughout the study region.

TABLE 5: Chronology of Historical Archaeological Research in the Upper Mississippi Valley from the Falls of St. Anthony to Lock & Dam No.10 at Guttenberg, Iowa.

<u>Year</u>	<u>Site</u>	<u>Investigator/ Organization</u>	<u>Pool</u>
1936- 37	Fort Shelby-McKay-Crawford (47-CR-249) Villa Louis grounds, St. Feriote Island, Prairie du Chien, Crawford County, Wisconsin (1813-28)	Leland R. Cooper, Works Progress Admin- istration (W.P.A.)	10
1955	Jean Baptiste Faribault's Post, Pike Island, Dakota County, Minnesota (1820-24)	Verlan R. and Katherine C. Johns, St. Paul and Eldon Johnson, SPSM	2
1957, 1965 present	Fort Snelling, excavations and restoration, Hennepin County, Minnesota (1819-1946)	John C. Callender, MHS (1957): Charles Diesen, MHS(1968-75): Robert Clouse, MHS (1975- present)	2
1964	Cantonment New Hope (21-DK-24), Picnic Island, Hennepin County, Minnesota (1819)	Loren Johnson, MHS	2
1972	Grey Cloud Island, Washington County, Minnesota	Doug Birk, MHS	2
1975	Blocks 13 and 16, 4th Ward, St. Feriote Island, Prairie du Chien, Crawford County, Wisconsin	Joan E. Freeman, SHSW	10
1975	Historic Study of Pike Island, Dakota County, Minnesota	Susan Zeik, MHS	2
1976	Historic Study of St. Feriote Island, Prairie du Chien, Crawford County, Wisconsin	Edgar S. Oerichbauer, SHSW	10
1976	Rolette House (47-CR-167), St. Feriote Island, Prairie du Chien, Crawford County, Wisconsin (c.1840s)	Joan E. Freeman, SHSW	10
1976	Proposed site of Fort Beauhar- nois on Lake Pepin, Goodhue County, Minnesota (1727)	Doug Birk and Judy Poseley, MHS	4

1977	Rolette House (47-CR-167), St. Feriole Island, Prairie du Chien, Crawford County, Wisconsin (c.1840s)	Joan E. Freeman, SHSW	10
1977	Great River Road survey in Iowa	John Hotopp, OSA	9-10
1979- 82	Great River Road survey in Wisconsin	John T. Penman, SHSW	3-9
1980	Fort St. Antoine (47-PE-22), Pepin County, Wisconsin (1686-1698)	John T. Penman SHSW	4
1981	Hagensick Brewery Site (13-CT-168), McGregor, Clayton County, Iowa (c.1840s)	Joyce McKay	10

OSA	Office of State Archaeologist of Iowa
MHS	Minnesota Historical Society
SHSW	State Historical Society of Wisconsin
SPSM	St. Paul Science Museum

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STUDY METHODS, DATA MATRIX, AND DATA SUMMARY

INTRODUCTION:

The appended Scope of Work (Appendix A) identifies this investigation as a Literature Search and Records review of The Upper Mississippi River Basin: River Mile (RM) 857.6, Above St. Anthony Falls to Lock and Dam 10. The following discussion presents the methods utilized for data collection, organization, and reporting. Subsequent tasks to data collection are also detailed. Finally, the study results are summarized.

METHODOLOGY:

During the first one-half of the project, efforts were focused on gathering all available information on previously reported prehistoric archaeological sites, historic archaeological sites, and historically or architecturally significant properties located along the Upper Mississippi River corridor between Guttenberg, Iowa and the Falls of St. Anthony. During April, May and June of 1982 site records and inventory files located at the State Historic Preservation Offices in Minnesota, Iowa, and Wisconsin were examined and all pertinent site information was recorded.

In addition to the comprehensive review of state inventory files and records, an exhaustive literature and archive search was implemented to record additional site information in each of the eighteen counties bordering the Upper Mississippi River in the designated Study Area. For historic sites, preliminary research began at the State Historical Society of Wisconsin library in Madison where sixteen periodical sources known to contain pertinent information relating to the history of the region were reviewed in their entirety. The bulk of these sources included publications of the State Historical Society of Wisconsin (Wisconsin Historical Collections, Proceedings, and the Wisconsin Magazine of History), the Minnesota Historical Society (Minnesota Historical Collections, Minnesota History, Gopher Historian), and the State Historical Society of Iowa (The Palimpsest, The Iowa Journal of History and Politics). Other sources, including archaeological, historical, and scientific journals, county and local histories, and several newspaper articles were also examined.

Unpublished sources of information were also examined, including both federal government documents (Government Land Office survey records and notes; early exploration and military reports) and state documents (Wisconsin Department of Natural Resources Surface Water Resources Reports). Local government documents such as deeds, mortgages and land records, tax rolls, court records, and censuses are available but were not reviewed during the course of the project.

In addition, a number of archaeological and historic site survey reports prepared for local, state, and federal agencies were also reviewed. The Wisconsin Great River Road survey and testing project reports prepared under the direction of John T. Penman of the State Historical Society of Wisconsin (1979-1982) and the multi-volume cultural resource survey of the Iowa Great River Road prepared by John Hotopp, Office of the Iowa State Archaeologist, and others (1977) were invaluable research reports. The sections on Allamakee and Clayton Counties in the latter report, for example, contained nearly all of the information on historic sites recorded within the Study Area in Iowa.

Other unpublished sources were also examined and include county historical manuscript collections, an assortment of maps, scholarly works, historic preservation/restoration reports, pamphlets, historic walking tour booklets, state park brochures, personal scrap-books, and oral histories (taped).

A computerized bibliographic search of dissertation abstracts, conducted at the beginning of the project with the assistance of the reference librarians at Memorial Library on the University of Wisconsin-Madison campus, was particularly useful in identifying and locating several pertinent unpublished Ph.D. dissertations on the history of the Upper Mississippi Valley.

For prehistoric sites, many of the same periodical materials were reviewed. Contract reports housed at various state agencies were reviewed for Iowa, Minnesota, and Wisconsin. Serial publications included The Minnesota Archeologist, The Wisconsin Archeologist, Occasional Publications in Minnesota Anthropology, publications of the Minnesota State Historical Society, the Milwaukee Public Museum, the St. Paul Science Museum, and publications of the Office of the Iowa State Archaeologist and represent a sample of the traditional literature that was reviewed. For a more complete tabulation, readers are referred to Volume XII (Bibliography).

Archive files included those housed at state repositories and include site codification files, archaeological atlases, map files, and others.

Following the tabulation of literature and archive information, additional work was conducted at area repositories. These included the local sources of information at Guttenberg, Wabasha, Winona, Red Wing, Hastings, St. Paul, La Crosse, Prairie du Chien, Effigy Mounds National Monument, Milwaukee, Madison, and Iowa City. In all, a total of seven museums and fourteen libraries were visited. Variable operating hours at public libraries in Lake City, Minnesota; New Albin and Lansing, Iowa; and at Cassville, Trempealeau, Alma, and Prescott, Wisconsin prevented the review of materials at these

libraries. Several manuscript and photographic collections such as those relating to steamboat navigation at the Winona County Historical Society Museum and logging activities at the La Crosse Area Research Center, University of Wisconsin La Crosse, were too extensive to examine in their entirety and thus were sampled rather than intensively researched.

There is considerable documentary and published material on the history of the Upper Mississippi Valley. Approximately 850 bibliographic references (excluding maps) relating to the history of the Upper Mississippi Valley were identified during the course of the literature search and records review. This tabulation which is integrated within the study bibliography is by no means complete, but is viewed as a valuable heuristic device. A major historiographic survey of the region has not yet been accomplished. Petersen's thematic guide to the history of Iowa (1952) was perhaps the most comprehensive work involving the history of the study area that was reviewed.

While topics such as steamboat navigation, logging, and the "great frontier pioneers" such as Ramsey, Sibley, and Dousman are well represented in the literature, several gaps in the written history of the Upper Mississippi Valley exist. Information on the common farmer and laborer and their contributions to the settlement of the region is particularly conspicuous in its absence. Also, very few histories of the small river landings, "paper towns," and railroad stops have been written.

Architectural survey work conducted in the region by State Historic Preservation Offices, historical societies, and preservation committees and organizations has largely focused on urban areas. Excellent architectural site inventories, for example, have been conducted at Guttenberg, Iowa and in Alma, Wisconsin. Extensive identification of historically or architecturally significant structures has also been conducted in Lansing, Iowa; La Crosse and Prairie du Chien, Wisconsin; and in several Minnesota communities including Winona, Red Wing, Wabasha, Frontenac, Hastings, and the Twin Cities metropolitan area. Most of the work conducted in rural areas in the region has been "windshield" surveys which are admittedly sketchy and represent only limited research. Intensive architectural survey work is needed in rural areas in the study area and in several small river towns such as McGregor, Iowa; Lake City, Minnesota; and Genoa and Glen Haven, Wisconsin.

For prehistoric sites, the gaps are better delineated. As previously noted, greatest limitations are those of early time horizons and the setting of the lowland flood plain has only begun to receive serious attention. Bluff-tops and terraces on the other hand, have been intensively investigated for almost a century. This phenomenon severely hinders meaningful comparisons between those two major settings.

Following compilation of basic site information, work sheets were developed to record pertinent information in a consistent fashion. For historic sites (structures in the main) a tabulation sheet that includes precise locations, eligibility for the National Register of Historic Places, time/style/function, and other information was executed. For prehistoric sites, a two page form was established that allowed for recording information from varying site and archive files. Information categories were established and then completed as information allowed. These data sheets were organized by Pools and are presented in Volumes II-XI of this report.

Locations for archaeological and historic sites and districts were then plotted on mylar transparencies and photographically established on 1:2,000 mylars provided by the St. Paul District, U.S. Army Corps of Engineers. These illustrations appear in Volumes II-XI.

Finally, the collected data were condensed and served as the bases for the narrative sections of this report. Neither the bibliography nor the narratives are designed to be complete. Rather, they represent frameworks and guides within which the information compiled during this study can be evaluated, and are designed in a manner so that individual sites and districts may be updated and revised as additional information is made available through continued inventory and evaluation studies.

DATA MATRIX

Site specific information gathered during the course of these investigations has been organized in two separate matrix configurations. First, for historically or architecturally significant properties, districts and single sites (or in some cases clusters) have been segregated. Each district was given a separate map code. For example, the Minnehaha Historic District within the City of Minneapolis is designated by map code 11. The data sheets, however, identify the 5 properties that comprise this district. State, County, District Name, Address/Legal Description or other appropriate locational reference, and specific identifying data including description and dates are provided for each property. Again, sites are grouped within Pool configurations for easy reference.

Prehistoric site information is recorded on a two-page form that provides map code, state codification number, legal description, physiographic data, cultural affiliation where possible, chronology, and bibliographic references. Because many of the known prehistoric (and in some instances historic) archaeological sites harbor more than one component, a matrix (table) was established for each pool to identify the total number of known components. These data are provided in the Introduction and Table 1 in Volumes II-XI.

DATA SUMMARY:

More than 1,000 historically or architecturally significant districts and sites have been identified and recorded. Of this condensed total, the total number of individual structures (see Volumes I-XI) is much greater, however, for sake of convenience and ease of reference, districts have been identified with a single code. For prehistoric sites, a total of more than 1,400 components have been identified during the course of the literature and records search. While the number of components is greater than the number of individual sites, the component identification has made it somewhat less difficult to identify gaps in survey coverage and biases in the compiled information sets.

As noted in previous discussions, gaps and biases do exist. For example, Upper and Lower St. Anthony's Falls and Pools 1 and 8 are not likely valid representations of actual site densities. Pool 10, on the other hand, has a staggering over-representation in the extant data. These biases and gaps derive from uneven inventory coverage and reflect historical accidents of investigation rather than the portrayals one would expect from systematic survey and reporting. Fay has already noted the emphases placed on urban rather than rural settings for historic sites and structures. This is quite likely a reflection of logistics. Institutions and individuals conducting inventory work tend to be located in town and cities.

These factors notwithstanding, we assume that our records and literature search has provided sufficient data for providing an understanding of the nature and distribution of historic and prehistoric sites that would be encountered within the St. Anthony's Falls-Guttenberg reach of the Mississippi River. We do not assume, however, given the nature of the previous investigations, that the compiled data could be effectively applied to generate any meaningful predictions regarding site densities or site locations. In addition, the records and literature search has been adequate to provide narrative frameworks within which the compiled information, and information likely to be collected in the future, can be evaluated. That the known prehistoric and historic sites represent a rich and varied heritage is clear. That investigations, conducted in a thorough and systematic fashion, would enhance the data base is certain. Some recommendations for enhancement are provided in the next chapter.

RECOMMENDATIONS FOR MANAGEMENT OF THE ARCHAEOLOGICAL AND HISTORICAL DATA BASE

INTRODUCTION:

The following recommendations for management of the archaeological and historical data base are made from the perspectives of inventory, evaluation, and enhancement. The recommendations are itemized and prioritized within these categories. Finally, these recommendations are derived from the information compiled during the literature and records search.

INVENTORY MAINTENANCE AND ENHANCEMENT:

1. The current inventory of historic and prehistoric sites should be updated at least on a semi-annual basis. Additional data sheets have been provided with each pool volume so that the existing document can be easily revised. During the course of its on-going role in the identification of cultural resources, the St. Paul District, Corps of Engineers will doubtless be conducting or sponsoring additional cultural resources inventory investigations. As the results of investigations are completed, previously unknown sites can easily be integrated within the existing inventory. This procedure will prolong the useful life of the records and literature search. In addition, close communication with State Historic Preservation Officers and State Archaeologists, as well as institution and non-institutional researchers, perhaps on an annual basis, would assist St. Paul District personnel in keeping the document current. This of course would improve its effectiveness as a planning document.

2. Professional organizations in Iowa, Minnesota, and Wisconsin, i.e., The Council for Minnesota Archaeology, The Association of Iowa Archaeologists, Inc., and The Wisconsin Archaeological Survey, Inc. should be polled for an expression of interest by their members in the results of the records and literature search. Copies of the documents should be made available to archaeologists who express interest in receiving the information. At the same time, it would be useful to request that those individuals conducting research and/or contract investigations in the region provide previously unrecorded, or updated site information to the St. Paul District. This same approach should be taken with the respective State Historical Societies or other appropriate organizations for historic site information.

3. Thematic or regional studies of the history and prehistory of the Upper Mississippi Valley should be initiated. Thematic studies for historic sites might include: steamboat navigation; mining; bridging the Great River; clamming industry; logging on the Upper Mississippi River; and early historic settlement

patterns on the Upper Mississippi River. Prehistoric studies could be implemented on a pool by pool basis, or within regional contexts (specific areas such as major tributary confluence areas).

4. Consideration should be given to initiating a geomorphological investigation of the lowland floodplain. Such investigations, either on a pool by pool or other regional configuration, should focus on: (1) the identification of recent (post-1850) landforms to reduce the total area in which prehistoric sites could be expected to occur; (2) the establishment of Holocene chronology which would document the relative age of landforms on the lowland floodplain, thereby providing an essential management tool; and (3) an assessment of the effects of channel maintenance on landforms of the lowland floodplain. Implementation of such a program would provide the means for identifying topographic contexts which could be de-emphasized in future inventory investigations as well as those which could harbor early prehistoric contexts. Finally, essential information with regard to the effects of management practices on the archaeological and historic resources could be identified. Until this is done it seems meaningless to entertain possible remedial action.

5. Inventories conducted under contract auspices should be made more demanding. At a minimum, results of investigations, either positive or negative, should be integrated within broader research goals and management objectives. This responsibility should be less difficult overview of cultural resources has been provided.

EVALUATION OF SITES:

1. Efforts should be made by the St. Paul District to determine the eligibility of the locks and dams located between the Falls of St. Anthony and Guttenberg, Iowa for inclusion in the National Register of Historic Places. The determination of eligibility process should be implemented by the agency with the assistance of State Historic Preservation Officers in Minnesota, Wisconsin, and Iowa and the Keeper of the National Register, National Park Service, U.S. Department of the Interior.

2. Field evaluations of several historic and prehistoric sites located along the river corridor are needed because these sites are currently undergoing destruction by erosion and wave-induced shoreline slumping. The Red House Landing Site, a turn-of-the-century clamming station in Iowa, for example, is but one of several important historic sites located in the study area that may be deserving of protection and preservation. Numerous prehistoric sites have been noted in field sheets and site files as being subjected to serious erosion. Determining the eligibility of those

sites currently being destroyed is a necessary step in implementing protection and preservation measures. In addition, for both historic and prehistoric sites, little intensive investigation has been carried out on the lowland floodplain. Seeking determinations of eligibility of threatened sites would not only foster protection and preservation, but would provide necessary additional information regarding the occupation and utilization of lowland floodplain contexts during the prehistoric and historic periods. This is viewed as an essential step in making decisions relating to site significance.

ENHANCEMENT:

1. The requirement that popular reports, suitable for public dissemination, be provided for cultural resources investigations should be maintained. Currently, it is the only mechanism that serves to provide the public with information regarding efforts to preserve, protect, and interpret the Nation's cultural heritage.
2. Limitations of staff, funds, and interpretations of agency responsibility all serve to prohibit significant enhancement of cultural resources. It is not likely that resources are at hand to develop sophisticated interpretive programs. In spite of these limitations, it seems apparent that the public does not receive its "fair share" of return for the investment of public funds for historic preservation efforts. As a first step to initiate better interpretive capabilities, an archaeological and historical interpretive plan needs to be developed. Avenues of interpretation can range from brief pamphlets and popular narratives to traveling displays and in-situ exhibits. When and if such a program would be developed is of course contingent both upon available funding and better definition of agency interests and responsibilities. It would seem appropriate to develop a set of alternative mechanisms to interpret cultural resources, evaluate their effects both on the public and the St. Paul District Corps of Engineers, and, finally, clarify the role the St. Paul District should play in an interpretive program.

ACKNOWLEDGEMENTS

Many individuals and institutions provided welcome assistance during the course of these investigations. Space prohibits acknowledgement of all who provided assistance, however, those whose contributions were most notable are cited below.

The staffs of the State Historical Preservation Office in Minnesota, Iowa and Wisconsin were extremely helpful and cooperative throughout the project by providing access to site inventory files, answering many questions, and directing the authors to both published and unpublished sources of information. Special thanks are expressed to Richard Dexter, Diane Filipowicz, Kim Mark Peters, and Bill Green in Wisconsin; Dennis Gimmestad, Susan Roth, Charles W. Nelson, Robert Clouse, and Florence Regan in Minnesota; and Ralph J. Christian, Liz Voss, and Caroline Villier in Iowa.

John T. Penman, Associate Curator of Anthropology and Lynn A. Rusch, Archaeological Assistant, State Historical Society of Wisconsin, Museum Division, shared their experiences of conducting historical and prehistoric archaeological research along the Great River Road in Wisconsin. Their recent update of the Wisconsin counties made this effort much less demanding than it might have been. Finally, Dr. Joan E. Freeman, Wisconsin State Archaeologist provided substantial insights based on her extensive work in the region.

Special assistance was provided by several public and university librarians contacted during the project. Ms. Eleanor Rodini, Reference Librarian, Memorial Library, University of Wisconsin-Madison, conducted a computer bibliographic search of dissertation abstracts relating to the history of the Upper Mississippi Valley. Mrs. Ethel Thieling of the Hastings Public Library provided valuable local resources on Hastings and Dakota County history.

The knowledgeable staffs of the Winona County Historical Society Museum, Winona, Minnesota, the Goodhue County Historical Society Museum in Red Wing, Minnesota, the Area Research Center at the University of Wisconsin-La Crosse, and the State Historical Society of Wisconsin, Archives and Library Divisions provided invaluable assistance in locating local, county, and regional sources of information.

Additional information concerning the local history of the Upper Mississippi Valley was provided by James David, Park Ranger, and Tim Mason, Park Naturalist, at Effigy Mounds National Monument in Iowa, and by Norman Indall of the Winona Area Chamber of Commerce.

Dr. Nancy O. Lurie and Mr. George Ulrich provided access to the collections of the Milwaukee Public Museum from the excavation of McKern and others during the 1930's. As well, the county collections were also useful in developing the summary of the regional prehistory. Thanks are also expressed to the Library Staff at the Milwaukee Public Museum for providing access to their extensive holdings.

Appreciation is expressed to the Staff of the Office of The Iowa State Archaeologist for providing site file information and many references regarding the history and prehistory of the study area. Special thanks are also expressed to Tom Trow, Leslie D. Peterson, and Scott Anfinson regarding prehistoric sites in Minnesota.

Collections from the La Crosse Area were made available for inspection by Dr. James Gallagher, Mississippi Valley Archaeology Center, Inc. Their recent work in the project area was most informative and gratitude is expressed for their cooperation.

As well, the many hours Ms. Martha Tappen spent plotting site locations on topographic maps and cross-checking site records deserves recognition. Finally, the physical problems of compiling, organizing, and duplicating the draft report and the many illustrations presented problems that the Staff of Great Lakes Archaeological Research Center, Inc. commendably overcame.

In conclusion, Mr. Robert Fay extends special thanks to Georgia Fay for her assistance and suggestions throughout the duration of the project.

APPENDIX A

Scope of Work - Contract No. DACW37-82-C-0011

APPENDIX "A"
SCOPE OF WORK
LITERATURE SEARCH AND RECORDS REVIEW OF
THE UPPER MISSISSIPPI RIVER BASIN:
River Mile (RM) 857.6, ABOVE ST. ANTHONY FALLS TO LOCK AND DAM 10

1.00 General

1.01 The contractor will undertake a literature search and records review of the Upper Mississippi River Basin from RM 857.6, above St. Anthony Falls to Lock and Dam No. 10 at Guttenberg, Iowa. This study is being undertaken as part of the St. Paul District's Master Plan for the 9-foot Navigation Project on the Upper Mississippi River.

1.02 The cultural resources investigation shall focus on the study area(s) as described in paragraph 4.01 of this Appendix A. The study shall consist of the following tasks: (1) a comprehensive review of existing records and review of published and unpublished literature; (2) an evaluation of recorded cultural resources located within the study area(s); and (3) the preparation of a detailed technical report and a general, popular report.

1.03 The objectives of the literature search and records review are to identify all the known cultural resources which may be or have been in the past affected by the operation and maintenance of Corps projects within the Upper Mississippi River Basin, identify gaps existing in our knowledge of the cultural resources of the area, identify biases which may be inherent in the data base, and recommend research goals for future investigations.

1.04 The cultural resources investigation reports serve several functions. The technical report is a planning tool which aids in the preservation and protection of our cultural heritage. It is also a comprehensive, scholarly document that not only fulfills federally-mandated legal requirements but also serves as a scientific reference for future professional studies. As such, the report's contents should be both descriptive and analytic in nature. The popular report provides the results of the investigation in laymen's terms. It serves primarily as a means of educating the public about the cultural heritage of an area.

1.05 The investigation and reports represent partial fulfillment of the obligation of the St. Paul District toward cultural resources as required by the National Environmental Policy Act of 1969 (P.L. 91-190); National Historic Preservation Act of 1966 (P.L. 89-665) as amended; Protection and Enhancement of the Cultural Environment (EO 11593); Advisory Council's Procedures for the Protection of Historic and Cultural Properties (36 CFR Part 800); Preservation of Historic and Archaeological Data 1974 (P.L. 93-291); and Corps of Engineers Identification and Evaluation of Cultural Resources (Draft ER 1105-2-50 and Draft EP 1105-2-55).

2.00 Project Description

2.01 The St. Paul District maintains and operates the Upper Mississippi River 9-Foot Navigation Channel from the Head of Navigation to Guttenberg, Iowa. The project was authorized by Congress through the River and Harbor Act of 3 July 1930. The Act provided for a navigation channel of 9-foot depth to be achieved by construction of a system of locks and dams between Minneapolis and the mouth of the Missouri River. In 1937 the project was extended 4.6 miles upstream in order to ascend the Falls of St. Anthony (River and Harbor Act of 26 August 1937). Although the majority of the locks and dams were constructed between 1930 and 1940, the upper lock at St. Anthony Falls was not opened to navigation until 1963.

2.02 That portion of the project which is under the jurisdiction of the St. Paul District extends from Lock and Dam No. 10 at Guttenberg, Iowa (RM 615.1) to RM 857.6 above St. Anthony Falls, a distance of 242.5 miles.

2.03 In addition to the Mississippi River main stem, the Minnesota, St. Croix, and Black River tributaries have also been authorized for channel maintenance for the purposes of commercial navigation.

2.04 The Minnesota River portion of the navigation project consists of channel improvements from Shakopee to the mouth. The St. Paul District maintains a 9-foot channel from the mouth, to 14.7 miles upstream near Savage, Minnesota. A 4-foot channel is maintained from Savage to Shakopee, 25.6 miles above the mouth of the Minnesota River. Maintenance of the 9-foot channel was authorized by Congress in the River and Harbor Act of 3 July 1958 and the 4-foot channel by the River and Harbor Act of 13 July 1892.

2.05 The St. Croix River portion of the navigation project consists of channel improvements from the mouth to Stillwater, a distance of 24.5 miles. Above Stillwater a 3-foot channel is authorized to Taylor's Falls at mile 51.8. However, this 3-foot channel is not actively maintained. Maintenance of the 9-foot channel was authorized by Congress in the River and Harbor Act of 30 August 1939 and the 3-foot channel by the River and Harbor Act of 18 June 1887. Prior to authorization of the 9-foot channel, a 6-foot channel to Stillwater was authorized by the River and Harbor Act of 21 January 1927.

2.06 The River and Harbor Act of 26 August 1937 authorized a navigation channel on the Black River, Wisconsin. A 9-foot channel is maintained below the normal elevation of Pool No. 3 from the mouth of the Black River to a point 1.4 miles upstream.

3.00 Definitions

3.01 "Cultural resources" are defined to include any building, site, district, structure, object, data, or other material relating to the history, architecture, archaeology, or culture of an area.

3.02 "Literature search" is defined as an examination and review of written reports, books, articles, etc., published and unpublished, which are pertinent to the cultural resources investigation to be carried out for a particular project. The purpose of the literature search is to familiarize the Contractor with the culture, history, and past investigations which have been carried out in the area of the study, and to provide this information in a summarized form to the agency requesting the search. While the existing data could be extensive, the literature search should be limited, as much as possible, to providing a usable body of data for the purposes outlined above.

3.03 "Records review" is defined as the examination and review of records, files, etc., which are maintained by various local and State agencies. The purpose of the records review is to document the location of known sites which may exist within the project area, their condition, the extent of past work undertaken at the site, and any other information which may be relevant in assessing the significance of the site.

4.00 Study Area

4.01 This literature search and records review will be concerned only with the Mississippi River Main Stem. A literature search and records review of the Minnesota River portion of the navigation project, as described in Section 2.04, has been completed by the U.S. Fish and Wildlife Service as part of refug lands. A study of the St. Croix portion of the navigation project, as described in Section 2.05, will not be undertaken at this time.

4.02 The areas to be examined as part of this study shall be within the indicated study area as shown on maps 1-5. Generally, this study area will include the area between lines drawn 1/2-mile landward of the bluff line on either side of the Mississippi River. The study area will extend from RM 857.0, above St. Anthony Falls, to Lock and Dam No. 10. (Maps #1-5 to be provided by the Government.)

5.00 Performance Specifications

5.01 The Contractor will utilize a systematic, interdisciplinary approach in conducting the study. The Contractor will provide specialized knowledge and skills during the course of the study, to include expertise in archaeology and other social and natural sciences as required. Personnel involved with the work under this contract must meet the minimum professional qualifications outlined in Appendix B.

5.02 The extent and character of the work to be accomplished will be subject to the general supervision, direction, control, and approval of the Contracting Officer.

5.03 Techniques and methodologies used during the investigation shall be representative of the current state of knowledge for their respective disciplines.

5.04 The Contractor shall keep standard records which shall include, but not be limited to, research notes, site survey forms, maps, and photographs.

5.05 The Contractor shall provide all materials and equipment as may be necessary to expeditiously perform those services required of the study.

Literature Search

5.06 Information and data for the literature search and records review will be obtained from, but not limited to, the following sources:

a. Published and unpublished reports and documents such as books, journals, theses, dissertations, manuscripts, newspapers, W.P.A. reports, surveyors' maps and notes, early atlases, and missionary records. Pertinent reports prepared for the St. Paul District are included in Table 1 attached hereto and made a part hereof.

b. Site files and other information held at the Minnesota Historical Society, the State Historical Department of Iowa, and the State Historical Society of Wisconsin; the State Archaeologist's Offices; the University of Minnesota, Luther College, and the University of Wisconsin Departments of Anthropology and libraries; and materials available from county and local historical societies.

c. The Contractor will obtain from the State Historic Preservation Offices information regarding any cultural resources in the project area that have been nominated or are being considered for nomination to the National Register of Historic Places.

d. Consultation with other professionals familiar with cultural resources in the area.

e. Consultations with amateur archaeologists and individuals concerned with local history in order to locate sites and to identify and define local interests and resources perceived to be locally significant.

5.07 A study and evaluation of previous archaeological and historical studies of the region, which are pertinent to the goals and objectives of the St. Paul District as it relates to this study, will be made to interpret the date, extent, and adequacy of the past work. A summary of the evaluation should be provided in the report.

5.08 The literature search should include a listing of all sites (historic and prehistoric) identified during the course of the study.

6.00 General Report Requirements

6.01 Upon completion of the literature search and records review, the Contractor shall prepare a technical report, detailing the results of the investigation, and a popular report, written in laymen's terms, suitable for release to the public. Normally, the length of the popular report will not exceed ten type-written pages.

6.02 The technical report shall include, but not be limited to, the following sections. These sections do not necessarily need to be discrete sections however, they should be readily discernable to the reader.

a. Title page: The title page should provide the following information: the type of investigation undertaken; the cultural resources which were assessed (archaeological, historical, and architectural); the project name and location (county and State); the date of the report; the Contractor's name; the contract number; the name of the author(s) and/or Principal Investigator; the signature of the Principal Investigator; and the agency for which the report is being prepared.

b. Administrative summary: The summary will be a synopsis of the report defining the project area and the level of the cultural resources investigation. It shall summarize the research objectives and problems; methods, numbers, and types of resources identified; the significant recommendations; and any unusual or innovative findings or techniques developed during the course of the investigation. Because this information will serve both as an administrative summary and as a portion of that information required by the Department of the Interior for its annual report to Congress (pursuant to section 5.c. of the Reservoir Salvage Act as amended), the summary should be as detailed and succinct as possible. Normally the summary will not exceed one typewritten page.

c. Table of Contents.

d. Introduction: This section should include the purpose of the report; a description of the project; the location of the project including map of the general area; and a project map (a list of USGS Quadrangle maps which cover the project area should also be included).

e. Environmental Setting: This section should contain a brief description of the environment of the study area, both present and past conditions, and it should be of a length commensurate with other sections of supporting type information. The purpose of this section is to document changes in past environmental conditions and the manner in which man has adapted to or attempted to change these conditions. The discussion should follow a broader habitat approach, rather than a listing of faunal and floral species. When possible, specific examples should be provided as supportive evidence of these changes, such as pollen studies and environmental data contained within prehistoric sites.

f. Study Methods: This section should give an explicit statement of the study methods and rationale under which the investigation was completed. It should document the general sources which were sought and the types of data which were expected of these sources. (For example, an archaeological journal may provide information on past surveys and excavations which is useful not only for site locations but also for assessing the quality of past work and apparent data gaps which may exist, whereas field notes of General Land Office (GLO) surveys may provide information on the location of prehistoric and early historic sites and early vegetation of an area.)

g. Summary of Regional Prehistory and History: This section should discuss the regional cultural developments in their spatial and chronological position.

h. Investigation Results: This section should describe the historical as well as the prehistoric archaeological resources encountered in the literature search and survey, with each site discussed as a separate unit. The site description should include the legal description of the site and the USGS quadrangle map on which it can be found, the size of the site, type of site (i.e., historic dwelling, prehistoric village, mound group, etc.), the cultural component(s) of the site (if discernable), and any available information on the general nature of the site. For those sites listed on the National Register of

Historic Places, the description shall include a statement of significance and a map showing the boundaries of the site or district. Unpublished site maps should be referenced on site sheets, and these maps will be included in the text or appendices as felt to be appropriate by the Contractor. This section should also contain a brief summary of previous archaeological and historical work undertaken at the site including the date, extent, and adequacy of the past work as it reflects on the interpretation of what might be found in the project area. Official site designations should be included for the resources discussed. A means of cross-referencing these sites with the bibliographic entries in which they may be located should be developed.

i. Recommendations: This section should discuss the potential of the area to produce presently unknown cultural resources, and it should point out any biases which may be inherent in the resource base as it exists today. The section should outline any gaps in the present data base and should develop specific research goals which may be used in subsequent investigations.

j. References: American Antiquity format should be used.

k. Appendix: This section should contain the scope of work and the resumes of the Principal Investigator and other major contributors to the study.

6.03 Failure to fulfill these report requirements may result in the rejection of the report by the Contracting Officer.

7.00 Format Specifications

7.01 Text materials will be typed (single-spaced) on good quality bond paper, 8.5 inches by 11.0 inches, with a 1.5-inch binding margin on the left, 1-inch margins on the top and right, and a 1.5-inch margin at the bottom. The report should be reproduced on paper of sufficient weight to allow for printing on both sides of each page.

7.02 Information will be presented in textual, tabular, and graphic forms, whichever is most appropriate, effective, or advantageous to communicate the necessary information.

7.03 All figures must be readily reproducible by standard xerographic equipment.

8.00 Submittals

8.01 The Contractor will submit reports according to the following schedules:

a. Draft Final Report: Fifteen copies will be submitted 140 calendar days after contract award. The Contracting Officer will provide the Contractor with comments on this draft report.

b. Revised Final Report: Twenty copies plus an original, camera ready copy will be submitted to the Contracting Officer 30 Calendar days after receipt of comments from the Government. This final report will include appropriate revisions in response to the Contracting Officer's comments.

8.02 The Contractor shall furnish separately, as part of contract correspondence one set each of the U.S. Fish and Wildlife Service, Upper Mississippi River - GREAT I maps, Pools 1-10 (27 sheets, 1:24000) showing the location of all cultural resources located during the literature search and records review. Two sets of these maps will be provided by the Contracting Officer. The Contracting Officer will also provide one reduced set of GREAT mylars (16 sheets) to be used for the technical report. The Contractor shall show the location of all cultural resources located during the literature search and records review on these maps.

8.03 The Contractor shall submit upon request of the Contracting Officer all notes, documents, photographs, records, maps, correspondence and any other materials of any nature obtained under this contract.

8.04 The Contractor shall submit the photographic negatives for all black and white photographs which appear in the final report.

8.05 The Contractor shall not release any sketch, photograph, report, or other material of any nature obtained or prepared under this contract without specific written approval of the Contracting Officer prior to the acceptance of the final report by the Government.

9.00 Method of Payment

9.01 Requests for partial payment under this fixed price contract shall be made monthly on ENG Form 93. A 10 percent retained percentage will be withheld from each partial payment. Upon approval of the final reports by the Contracting Officer, final payment, including previously retained percentage, shall be made.

1 Incl
Table 1

TABLE 1
REPORTS PREPARED FOR THE ST. PAUL DISTRICT

An Archaeological Survey of Two Proposed Channel Cuts in Pool 5 of the Upper Mississippi River, by Philip Salkin, St. Paul District, Corps of Engineers,

An Archaeological Survey of a Dredge Disposal Site in Hastings, Minnesota, by Philip Salkin, St. Paul District, Corps of Engineers, July 1980

A Preliminary Archaeological Survey of a Proposed Recreational Development and Fish and Wildlife Enhancement Project in Lake Rebecca, Hastings, Minnesota, by Philip Salkin, St. Paul District, Corps of Engineers, June 1978

An Archaeological Survey of Proposed Small Boat Harbor Sites in Lake City, Minnesota, by Philip Salkin, St. Paul District, Corps of Engineers, August 1978

Archaeological Survey of 1975 Season Dredge Spoil Deposit Sites in Mississippi River Pools USAF, 1, 2, 3, 4, and 5, by Elden Johnson and G. Joseph Hudak, 1975

A Preliminary Research Report on Pike Island, by Susan Zeik, January 1975

Archaeological Survey of the Mississippi River 9-Foot Channel, Pools 5A, 6, 7, and 8, by Richard B. Lane, St. Cloud State University, 15 January 1976.

Upper Mississippi River Dredge Disposal Survey and Testing (Pools 9 and 10), by David Benn, Luther College, 7 January 1976

Archaeological Survey of the Proposed Winona Levee Flood Control Project - Stage II, by G. Joseph Hudak, The Science Museum of Minnesota, 30 November 1975

Cultural Resources: State Road and Ebner Coulee, La Crosse, Wisconsin Final EIS, prepared by River Studies Center, University of Wisconsin - La Crosse, May 1975

A Cultural Resources Investigation of the State Road and Ebner Coulee Project, by James Gallagher, University of Wisconsin - La Crosse, July 1980 (draft)

Cultural Resource Reconnaissance of Selected Portions of Corps of Engineers Property Located near La Crosse, Wisconsin, by Susan and Rain Vehik, University of Wisconsin, La Crosse, 12 May 1977

Preliminary Investigation of the FTD Site (12 AM 210), by David Benn, Luther College, 16 January 1976

An Archaeological Survey of a Proposed Boat Launching Complex in Guttenberg, Iowa, by Philip Salkin, St. Paul District, Corps of Engineers, June 1978

Prairie du Chien: A Historical Study, by Edgar Oerichbauer, State Historical Society of Wisconsin, October 1976

Prairie du Chien: Historical and Architectural Resources, by Alison Hoagland and Bradley Frandsen, Historic American Buildings Survey, Summer 1978

Prairie du Chien: Urban Consolidation and Decline, 1858-1930, by Richard Zeitlin, St. Paul District, Corps of Engineers, July 1980

APPENDIX B

Curriculum Vitae - Key Personnel

CURRICULUM VITA

DAVID FREDERIC OVERSTREET

PII Redacted

Special Areas of Interest:

North American Prehistory, Ethnography, and Ethnohistory, Great Lakes Region. Historical Archaeology-19th Century Logging Industry. Public Education, Cultural Resources Management, and Administration. Historic Preservation Laws.

Academic History:

Bachelor of Science, Anthropology, University of Wisconsin-Milwaukee, 1968

Master of Science, Anthropology, University of Wisconsin-Milwaukee, 1971

Doctor of Philosophy, Anthropology, University of Wisconsin-Milwaukee, 1976

(Data universe: Horticultural Societies; Geographic Region; Prehistory and Ethnology, Eastern United States; Dissertation Title: "The Grand River, Koshkonong, Green Bay, and Lake Winnebago Phases--Eight Hundred Years of Eastern Wisconsin Oneota Prehistory." Foreign Language proficiency: Spanish and French. Minor Studies: Linguistics)

Membership in Professional Organizations and Societies:

Society for American Archaeology, Wisconsin State Representative Committee for Public Archaeology. 1978, 1979, 1980.

American Anthropological Association

American Association for the Advancement of Science

American Museum of Natural History, Associate Member

Missouri Archaeological Society

Minnesota Archaeological Society

Michigan Archaeological Society

Wisconsin Archaeological Society, President 1976-77, Board of Directors 1978-82, Program Chairman 1974-77, 1980-82,

Editor, The Wisconsin Archeologist, 1977-82.

The State Historical Society of Wisconsin

The Waukesha County Historical Society, Board of Directors 1982

The Wisconsin Academy of Arts, Science, and Letters

The Wisconsin Archaeological Survey, Secretary-Treasurer 1976-77, President 1978-79

The Iowa Archaeological Society

Professional Papers presented:

- 1971 Midwest Archaeological Field Conference, Cleveland, Ohio.
- 1971 The Wisconsin Archaeological Society, Milwaukee, Wisconsin.
- 1972 The Wisconsin Archaeological Society, Milwaukee, Wisconsin.
- 1973 The Wisconsin Archaeological Society, Milwaukee, Wisconsin.
- 1974 Society for American Archaeology, Washington, D.C.
- 1974 Midwest Archaeological Field Conference, Milwaukee, Wisconsin.
- 1975 Northland College, Apostle Island National Lakeshore Research Symposium, Ashland, Wisconsin.
- 1975 Invited participant, Woodland Survey Conference, Northern Michigan University, Marquette, Michigan.
- 1975 Cultural Resources Symposium, University of Wisconsin-Waukesha County.
- 1976 Invited participant, Woodland Survey Conference, University of Wisconsin-Marathon County.
- 1976 Logan Museum of Anthropology, Beloit College, Beloit, Wisconsin.
- 1976 Midwest Archaeological Field Conference-Plains Anthropology Conference (joint meeting), Minneapolis, Minnesota.
- 1976 The Wisconsin Archaeological Society, Milwaukee, Wisconsin.
- 1976 The Wisconsin Archaeological Society, Charles E. Brown Chapter, Madison, Wisconsin.
- 1978 Kenosha Public Museum, Kenosha, Wisconsin.
- 1978 The Wisconsin Archaeological Society, Dr. Bruder Chapter, Mayville, Wisconsin.
- 1978 The Wisconsin Archaeological Society, Fox Valley Chapter, Oshkosh Public Museum, Oshkosh, Wisconsin.
- 1978 The Wisconsin Archaeological Society, Charles E. Brown Chapter, Madison, Wisconsin.
- 1978 The Wisconsin Archaeological Society, Milwaukee, Wisconsin.
- 1979 The Wisconsin Academy of Science, Arts, and Letters, Carthage College, Kenosha, Wisconsin.
- 1980 Current Directions in Midwestern Archaeology, sponsored by Mankato State University and the Council for Minnesota Archaeology, Mankato, Minnesota.

Public Service Presentations:

Various presentations to government agencies such as The United States Forest Service, National Park Service, Department of Natural Resources, Planning Commissions, etc. Various presentations to both elementary and secondary school groups. Various presentations to professional organizations Lion's club, Legal Secretaries, Questars Club, etc. Various presentations to local historical societies and church groups.

Professional Publications:

- 1972 The Archaeological Survey of the Columbia Power Plant, The Wisconsin Archeologist, ns., Vol. 53 (2).
- 1974 A Rapid Field Test for Archaeological Site Survey: An Application and Evaluation. The Wisconsin Archeologist, n.s., Vol. 55 (4).
- 1975 Summary Report: Archaeological Survey of Madeline Island. Manuscript on file, Department of the Interior and The State Historical Society of Wisconsin.
- 1976 Summary Report: Archaeological Inventory and Evaluation of the Cultural Resources within the Apostle Islands National Lakeshore. The Logan Museum of Anthropology, Beloit College, Beloit, Wisconsin.
- 1977 Wisconsin Binomial Pottery Types and Oneota Prehistory. The Wisconsin Archeologist, ns. Vol. 58 (2).
- 1978 Oneota Settlement Patterns in Eastern Wisconsin--Some Considerations of Time and Space. In: Mississippian Settlement Patterns, Bruce Smith, ED. Academic Press.
- 1980a The Convent Knoll Site (47 Wk 327): A Red Ocher Cemetery in Waukesha County, Wisconsin. The Wisconsin Archeologist, n.s. Vol. 61 (1).
- 1980b Archaeological Recovery at 11-Ri-337, an Early Middle Woodland Shell Midden in East Moline, Illinois. The Wisconsin Archeologist, n.s., Vol. 61 (2).
- 1981a Investigations at the Pipe Site (47-Fd-10) with an Interpretation of Eastern Wisconsin Oneota Prehistory. The Wisconsin Archeologist, n.s. Vol. 62 (4).
- 1981b Applications of Menominee-Winnebago Subsistence Patterns to Lake Prehistoric Manifestations in the Green Bay Coastal Corridor. In: Current Directions in Midwestern Archaeology--Selected Papers from the Mankato Conference, Scott F. Anfinson, ED. Occasional Publications in Minnesota Anthropology No. 9. Minnesota Archaeological Society.
- In Press: An Early Date from the Hixton Rockshelter, Jackson County, Wisconsin.
- Preliminary Report on excavations at the Mile-Long Site (47 Wl 110), Walworth County, Wisconsin.

Reviews:

- 1980 A Handbook of Minnesota Prehistoric Ceramics. Occasional Publications in Minnesota Anthropology, No. 5. S.F. Anfinson, Ed. In: The Wisconsin Archeologist, Vol. 61 (1).
- 1981a Oneota Culture in Northwestern Iowa. Amy E. Harvey. Report 12, Office of the State Archaeologist, The University of Iowa. In: Plains Anthropologist, 26-91.
- 1981b A Handbook of Minnesota Prehistoric Ceramics. Occasional Publications in Minnesota Anthropology, No. 5. S.F. In: The Minnesota Archaeologist, Vol. 40 (1).
- 1981c Exploring Iowa's Past. Lynn Marie Alex. University of Iowa Press. Iowa City, Iowa. In: The Wisconsin Archeologist Vol. 62 (4).
- 1981d Eastern Iowa Prehistory. Duane Anderson. Iowa State University Press, Ames, Iowa. In: The Wisconsin Archeologist, Vol. 62 (4).

Technical Publications (Contract Archaeology):

- 1976 An Intensive Inventory, Davenport Iowa, Local Flood Protection Project. Great Lakes Archaeological Research Center Reports of Investigations No. 2. Waukesha.
- 1976 An Archaeological Inventory of Sanitary Sewer Collection System and Waste Disposal Treatment Facility: Town of Salem Utility District No. 2, Kenosha County. Great Lakes Archaeological Research Center, Reports of Investigations No. 3. Waukesha.
- 1976 An Archaeological Inventory and Evaluation of the Sheboygan Falls and Kohler Forcemain Routes. Great Lakes Archaeological Research Center Reports of Investigations No. 6. Waukesha.
- 1976 Archaeological Monitoring and Mitigation, Campground and Trails Development and Rehabilitation, The Apostle Islands National Lakeshore, Stockton Island. Great Lakes Archaeological Research Center Reports of Investigations No. 7. Waukesha.
- 1976 An Archaeological Survey of The Fennimore, Wisconsin proposed Interceptor Sewer Route and Sewage Treatment Plant Site. Great Lakes Archaeological Research Center Reports of Investigations No. 8. Waukesha.
- 1976 Archaeological Inventory and Evaluation, Walworth County Metropolitan Sewerage District. Great Lakes Archaeological Research Center Reports of Investigations No. 12. Waukesha.

Technical Publications (Contract Archaeology) Cont'd.

- 1977 Archaeological Survey for Fox River Navigation Project Disposal Sites. Great Lakes Archaeological Research Center Reports of Investigations No. 13. Waukesha.
- 1977 Cultural Resource Reconnaissance, Five Lake Michigan Harbors. Great Lakes Archaeological Research Center, Reports of Investigations No. 16. Waukesha.
- 1977 Archaeological Inventory, The Sturtevant Facilities Plant, Sturtevant, Wisconsin. Great Lakes Archaeological Research Center No. 18. Waukesha.
- 1977 Archaeological Inventory and Evaluation: The Proposed Waukesha County Technical Institute Expansion Project. Great Lakes Archaeological Research Center Reports of Investigations No. 20. Waukesha.
- 1977 Archaeological Inventory and Evaluation of The Weston Unit 3 Power Plant Site. Great Lakes Archaeological Research Center Reports of Investigations No. 21. Waukesha.
- 1977 Archaeological Inventory and Evaluation of Brillion, Wisconsin Wastewater Treatment Plant Facilities. Great Lakes Archaeological Research Center Reports of Investigations No. 22. Waukesha.
- 1977 Archaeological Inventory and Evaluation of Butte Des Morts Utility District, Menasha (West). Great Lakes Archaeological Research Center, Reports of Investigations No. 23. Waukesha.
- 1977 Partial Inventory of The Eagle Lake Sewer Utility District. Great Lakes Archaeological Research Center, Inc. Reports of Investigations No. 25. Waukesha.
- 1977 Cultural Resources Reconnaissance, Loves Park, Illinois. Interim 2, Flood Feasibility Study. Great Lakes Archaeological Research Center Reports of Investigations No. 28. Waukesha.
- 1977 Cultural Resources Reconnaissance of a Proposed Small Boat Harbor at Green Bay, Wisconsin. Great Lakes Archaeological Research Center Reports of Investigations No. 30. Waukesha.
- 1978 Cultural Resource Evaluation of The Sturgeon River Wilderness Study Area, Ottawa National Forest. Great Lakes Archaeological Research Center Reports of Investigations No. 33. Waukesha.
- 1978 Cultural Resources Reconnaissance for The Des Moines River Bank Erosion Study. Great Lakes Archaeological Research Center Reports of Investigations No. 32. Waukesha.

Technical Publications (Contract Archaeology) Cont'd.

- 1978 Cultural Resource Evaluation of Two Chequamegon National Forest Wilderness Study Areas: Flynn & Round Lakes. Great Lakes Archaeological Research Center Reports of Investigations No. 34. Waukesha.
- 1978 Archaeological Survey in Three Waukesha County Drainage Systems-The Fox, Bark, and Pewaukee Rivers. Great Lakes Archaeological Research Center Reports of Investigations No. 35. Waukesha.
- 1978 Archaeological Inventory and Evaluation of The Proposed Wastewater Treatment Plant Facilities, Fond Du Lac County, Wisconsin. Great Lakes Archaeological Research Center Reports of Investigations No. 36. Waukesha.
- 1978 Archaeological Survey of Proposed Construction Areas in The Horicon National Wildlife Refuge. Great Lakes Archaeological Research Center Reports of Investigations No. 39. Waukesha.
- 1979 Cultural Resources Overview of The Chequamegon National Forest. Great Lakes Archaeological Research Center, Reports of Investigations No. 50. Waukesha.
- 1979 Archaeological Recovery at 11 Ri 337, An Early Middle Woodland Shell Midden in East Moline, Illinois. Great Lakes Archaeological Research Center Reports of Investigations No. 60. Waukesha.
- 1979 Archaeological Survey and Test Excavations in the Fox River Drainage--Waukesha, Racine, and Kenosha Counties. Great Lakes Archaeological Research Center Reports of Investigations No. 67. Waukesha.
- 1979 Archaeological Studies at The Mile-Long Site (47 W1 110), A Planning and Preservation Report. Great Lakes Archaeological Research Center Reports of Investigations No. 70. Waukesha.
- 1979 Archaeological Inventory: Proposed Oshkosh Area Sanitary System. Great Lakes Archaeological Research Center Reports of Investigations No. 72. Waukesha.
- 1979 Archaeological Survey of the Proposed Packerland Industrial Park Post Office Site. Green Bay, Wisconsin. Great Lakes Archaeological Research Center, Reports of Investigations No. 78. Waukesha.
- 1979 Archaeological Evaluation of the Proposed Madison Area Technical College at the Burke Site, Madison, Wisconsin. Great Lakes Archaeological Research Center Reports of Investigations No. 81. Waukesha.

Technical Publications (Contract Archaeology) Cont'd:

- 1979 Archaeological Survey of The East Shore of Lake Winnebago, 1979. Great Lakes Archaeological Research Center Reports of Investigations No. 86. Waukesha.
- 1979 Archaeological Survey of The Green Bay Coastal Corridor. Great Lakes Archaeological Research Center Reports of Investigation No. 87. Waukesha.
- 1980 Archaeological Inventory of the Proposed Interceptor Sewer at the City of Mayville, Dodge County, Wisconsin. Great Lakes Archaeological Research Center, Reports of Investigations No. 91. Waukesha.
- 1980 Archaeological Survey of Two Proposed Dredge Disposal Sites at the Sturgeon Bay Ship Canal. Great Lakes Archaeological Research Center, Reports of Investigations No. 92. Waukesha.
- 1980 Archaeological Inventory of a Proposed Development Site at the Intersection of U.S. Highways 41 and 10 near Appleton, Wisconsin. Great Lakes Archaeological Research Center, Reports of Investigations No. 96. Waukesha.
- 1980 Archaeological Investigations at Jim Falls, Chippewa County, Wisconsin. Great Lakes Archaeological Research Center, Reports of Investigations No. 99. Waukesha.
- 1981 Archaeological Survey of the East Shore of Lake Winnebago: 1980-81. Great Lakes Archaeological Research Center, Reports of Investigation No. 100. Waukesha.
- 1981 Archaeological Inventory and Evaluation of the Exxon Minerals Company Crandon Project Site, Forest and Langlade counties, Wisconsin. Great Lakes Archaeological Research Center, Reports of Investigations No. 107. Waukesha.
- 1981 Archaeological Reconnaissance of Lewiston and Portage Levees, Portage, Wisconsin. Great Lakes Archaeological Research Center, Reports of Investigations No. 108.
- 1981 Identification and Evaluation of Logging Industry-Related Cultural Resources, Nicolet National Forest. Great Lakes Archaeological Research Center, Reports of Investigations No. 114. Waukesha.
- 1981 Preliminary Investigations: Archaeology and Sediment Geomorphology, Navigation Pool 12, Upper Mississippi River. Great Lakes Archaeological Research Center, Reports of Investigations No. 115.

Archaeological Field Experience:

Fourteen years of field experience in Wisconsin, Illinois, Iowa, Michigan, and Minnesota.

Grants and Honors:

- 1971 The Wisconsin Archeological Society. Dissertation research at the Pipe Site, Pipe, Wisconsin.
- 1971 Academic Dean's nominee as National Candidate for Woodrow Wilson Dissertation Support Fellowship.
- 1972 The Wisconsin Archeological Society. Dissertation research at the Pipe Site, Pipe, Wisconsin. University of Wisconsin-Milwaukee Graduate School Fellowship.
- 1974 Appointed Logan Fellow, Logan Museum of Anthropology, Beloit College (appointment declined).
- 1975 Appointed Research Associate, Logan Museum of Anthropology, Beloit College.
- 1976 Title VI-A Grant to establish comparative teaching collection in Anthropology, University of Wisconsin-Waukesha.
- 1977 Historic Site Survey Grant from National Advisory Council on Historic Preservation. Administered by The State Historical Society of Wisconsin, Historic Preservation Division.
- 1978 Historic Site Survey Grant from National Advisory Council on Historic Preservation. Administered by The State Historical Society of Wisconsin, Historic Preservation Division.
- 1978 Archaeological Survey Grant from National Oceanic and Atmospheric Administration--Coastal Zone Management Program. Administered by the State Historical Society of Wisconsin and Wisconsin Department of Administration.
- 1979 Historic Site Survey Grant from National Advisory Council on Historic Preservation. Administered by The State Historical Society of Wisconsin, Historic Preservation Division.
- 1979 Zieman Foundation. Grant for printing subsidy for The Wisconsin Archeologist.
- 1979 Helfaer Foundation. Grant for printing subsidy for The Wisconsin Archeologist.

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- 1979 Awarded the Increase A. Lapham Research Medal for distinguished research in Anthropology. The Wisconsin Archeological Society.
- 1979 Awarded the Robert E. Ritzenthaler service award, The Wisconsin Archeological Society.
- 1980 Grant from the Rock Island District, U.S. Army Corps of Engineers for printing subsidy for The Wisconsin Archeologist.
- 1980 Grant from the Grootemaat Foundation for printing subsidy for The Wisconsin Archeologist.
- 1980 Grant from the Helfaer Foundation for printing subsidy for The Wisconsin Archeologist.
- 1980 Grant from the Zieman Foundation for printing subsidy for The Wisconsin Archeologist.
- 1981 Grant from the Zieman Foundation for hardware and software for production of The Wisconsin Archeologist.

Employment History:

Military service: U.S. Army, honorably discharged, July 1963.

- 1969-1971 Teaching Assistant in Anthropology, Department of Anthropology, University of Wisconsin--Milwaukee.
- 1973 Lecturer in Anthropology, Marquette University.
- 1974 Lecturer in Anthropology, University of Wisconsin-Milwaukee.
- 1972-1981 Associate Professor of Anthropology (tenure), The University of Wisconsin-Waukesha.
- 1975-1982 Director, Great Lakes Archaeological Research Center, Inc., Waukesha, WI.

University Courses Taught:

Introduction to Cultural Anthropology
General Anthropology
Introduction to Physical Anthropology
Intermediate Sociocultural Analysis
Human Evolution and Variation
Survey of World Prehistory--Origins of Civilization
Survey of World Ethnography
Methods and Techniques in Archaeology*
Wisconsin Prehistory
Comparative Religion

David F. Overstreet-10

University Courses Taught Cont'd:

Field Archaeology--Survey and Excavation
Analyses of Archaeological Materials and Data
Hominid Paleontology
North American Prehistory
North American Indians
Indians of The Western Great Lakes

Adult Education Courses Taught:

Site Survey in Archaeology, University of Wisconsin Extension
Map Making and survey techniques in Archaeology, University of
Wisconsin Extension.
Field Methods in Archaeology, University of Wisconsin Extension.

ROBERT PATRICK FAY

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Special Areas of Interest:

North American Prehistory, Eastern United States and
Western Great Lakes Region; Historical Archaeology;
Cultural Resource Management

Academic History:

Bachelor of Arts, Anthropology, University of Wisconsin-
Madison, 1974
Master of Arts, Applied Cultural History/Archaeology,
University of Kentucky, 1980

Professional Memberships:

Society for American Archaeology
Society for Historical Archaeology
The Wisconsin Archaeological Survey
The Wisconsin Archaeological Society
The Wisconsin Academy of Sciences, Arts and Letters
The National Trust for Historic Preservation

Professional Papers Presented:

1979 A 19th Century Underground Drainage System at
Liberty Hall, Frankfort, Kentucky. The 36th
Annual Meeting of the Southeastern Archaeological
Conference, Atlanta, Georgia.

Professional Publications:

1977 The Codification of Wisconsin's Archaeological Sites:
An Update Report. The Wisconsin Archaeologist 58(1):
62-70.

Technical Publications:

- 1975 A Report on Ceramic Material Recovered from the Presto
Rockshelter (Gt-157): An Archaic to Late Woodland
Rockshelter in Grant County, Wisconsin.
- 1976 Archaeological Survey Report: The Otter Creek Watershe
Structures #4, #5, and #11, Iowa County, Wisconsin.
Ms. on file, U.S.D.A.-Soil Conservation Service and
State Historical Society of Wisconsin.
- 1976 Three Archaeological Highway Survey Reports for projec
in Brown, Iowa, and Washington Counties, Wisconsin.
Ms. on file, State Historical Society of Wisconsin.

- 1978 An Archaeological Survey of Stricker and Tiedeman Ponds, Middleton, Wisconsin. Ms. on file, Anthropology Office, State Historical Society of Wisconsin.
- 1978 A Records and Literature Search of Archaeological Sites in Wisconsin Counties Located Within the Lake Michigan Coastal Zone. Ms. on file, Wisconsin Coastal Zone Management Program Office and the State Historical Society of Wisconsin.
- 1978 A Records Search of Archaeological Sites in the Highway Survey Files Located at the State Historical Society of Wisconsin. Ms. on file, State of Wisconsin, Division of Highways and the State Historical Society of Wisconsin.
- 1979 Test Excavations at Liberty Hall, Frankfort, Kentucky. Ms. on file, Kentucky Heritage Commission.
- 1980 Archaeological Investigations at Liberty Hall, Frankfort, Kentucky: 1979 Test Excavations. Ms. on file, Liberty Hall and the Kentucky Heritage Commission.
- 1980 The Vertebrate Faunal Remains from Liberty Hall, Frankfort, Kentucky: A Preliminary Report. Ms. on file, Department of Anthropology, University of Kentucky.
- 1980 Preliminary Report of an Archaeological Survey of Proposed Developments at Interstate State Park, Polk County, Wisconsin. Report of Investigations No. 1. Wisconsin Department of Natural Resources, Bureau of Parks and Recreation, Madison.
- 1981 Final Report of an Archaeological Survey of Proposed Developments at Interstate State Park, Polk County, Wisconsin. Report of Investigations No. 2. Wisconsin Department of Natural Resources, Bureau of Parks and Recreation, Madison.
- 1981 An Archaeological Survey of the Proposed Corridor for the Relocation of CTH "S" at Interstate State Park, Polk County, Wisconsin. Archaeological Report No. 3. Wisconsin Department of Natural Resources, Bureau of Parks and Recreation, Madison.
- 1981 An Archaeological Survey of the Proposed Dunnville Streambank Stabilization Project on the Red Cedar River, Dunnville Wildlife Area, Dunn County, Wisconsin. Archaeological Report No. 4. Wisconsin Department of Natural Resources, Bureau of Parks and Recreation, Madison.

- 1981 Final Report of an Archaeological Survey of Proposed Developments at Tower Hill State Park, Iowa County, Wisconsin. Archaeological Report No. 5. Wisconsin Department of Natural Resources, Bureau of Parks and Recreation, Madison.
- 1981 Summary Report of DNR Staff Archaeologist Activities for 1980-1981. Archaeological Report No. 6. Wisconsin Department of Natural Resources, Bureau of Parks and Recreation, Madison.
- 1981 Wisconsin Department of Natural Resources Cultural Resources Bibliography. Archaeological Report No. 7. Wisconsin Department of Natural Resources, Bureau of Parks and Recreation, Madison.

Archaeological Field Experience:

- 1972 Eight week field school, Aebischer (Paleo-Indian-Archaic) and Geiser (Woodland) Sites, Calumet County, Wisconsin. University of Wisconsin-Oshkosh, Dr. Alaric Faulkner, Field Director.
- 1974 Archaeological Site Survey, Proposed Upland Recreation Areas of Lake LaFarge Project, Vernon County, Wisconsin (10 weeks) crew member, State Historical Society of Wisconsin, John Halsey, Project Director.
- 1974 Test Excavations, Cortois (Pedretti) Village Site (Hopewell), Crawford County, Wisconsin (1 day) field volunteer.
- 1975 Site Survey and Test Excavations, Proposed Lower Pool of the Lake LaFarge Project, Vernon County, Wisconsin (10 weeks) crew member, State Historical Society of Wisconsin, John Halsey, Project Director.
- 1975 Aztalan State Park, Proposed Warehouse Site, Jefferson County, Wisconsin (1 day) field assistant, State Historical Society of Wisconsin, Dr. Joan E. Freeman, Project Director.
- 1975 Lenius Village Site (Woodland), Door County, Wisconsin (3 days) field assistant, State Historical Society of Wisconsin, John Halsey, Project Director.
- 1976 Highway Survey in Brown, Iowa, Richland, and Washington Counties, Wisconsin (12 weeks) project assistant, State Historical Society of Wisconsin, Dr. Joan E. Freeman, Supervisor.

- 1976 Archaeological Site Survey, Otter Creek Watershed, Iowa County, Wisconsin, U.S. Department of Agriculture-Soil Conservation Service (10 days) project assistant, State Historical Society of Wisconsin, Dr. Joan E. Freeman, Supervisor.
- 1976 Rolette House (c. 1840), Prairie Du Chien, Crawford County, Wisconsin (1 week) crew member, State Historical Society of Wisconsin, Dr. Joan E. Freeman, Project Director.
- 1977 Archaeological Site Survey, Stricker and Tiedeman Ponds, Middleton, Wisconsin (3 weeks) Co-Principal Investigator.
- 1977 Rolette House (c. 1840), Prairie du Chien, Crawford County, Wisconsin (4 weeks) project assistant, State Historical Society of Wisconsin, Dr. Joan E. Freeman, Project Director.
- 1978 North West Company Wintering Post (c. 1802-1803), Burnett County, Wisconsin (8 weeks) crew member, State Historical Society of Wisconsin, Dr. Joan E. Freeman and Edgar S. Oerichbauer, Project Directors.
- 1978 Johnson Site (Fort Ancient), Scott County, Kentucky (1 day) field volunteer, Charles Hockensmith, Principal Investigator, Department of Anthropology, University of Kentucky.
- 1978 Test Excavations at Liberty Hall (c. 1796), Frankfort, Kentucky (1 week), Principal Investigator.
- 1979 Salvage Excavations, Archaic Burial Site, Logan County, Kentucky (1 day) field volunteer, Department of Anthropology, University of Kentucky.
- 1979 Test Excavations at Liberty Hall (c. 1796), Frankfort, Kentucky (12 weeks) Principal Investigator.
- 1979 Archaeological Site Survey, Daniel Boone National Forest, Bath and Menifee Counties, Kentucky (1 day) crew member, Cultural Resource Assessment Program, Department of Anthropology, University of Kentucky.
- 1980 Test Excavations at Lee's Tavern (c. 1790), Nugent's Crossroads, Woodford County, Kentucky (4 weeks) field assistant, Kentucky Heritage Commission.
- 1980 Archaeological Site Survey, Tahoe National Forest, Sierra and Nevada Counties, California (2 weeks) field supervisor, Adena Information Management Corporation, Lexington, Kentucky, Dr. Richard Levy, Principal Investigator.

- 1980- Archaeological Site Surveys and Test Excavations at
1981 several Wisconsin Department of Natural Resources
properties: Buffalo River State Trail (Buffalo County),
Devil's Lake State Park (Sauk County), Dunnville Wildlife
Area (Dunn County), Governor Nelson State Park (Dane
County), Havenwoods State Forest Preserve (Milwaukee
County), Hoffman Hills Recreation Area (Dunn County),
Pike Lake State Park (Washington County), and Tower Hill
State Park (Iowa County), Principal Investigator.

Archaeological Laboratory Work:

- 1973 Part-time student lab assistant, Department of Anthropology
University of Wisconsin-Madison (4 weeks). Separated
snails and shell fragments from soil samples for
identification.
- 1975 Full-time lab assistant, Anthropology Office, State
Historical Society of Wisconsin (4 weeks). Catalogued
historic artifacts from Pendarvis (c. 1840s), Mineral
Point, Iowa County, Wisconsin.
- 1977 Full-time lab assistant, Anthropology Office, State
Historical Society of Wisconsin (8 weeks). Catalogued
historic and prehistoric artifacts from the Rolette
House (c. 1840), Prairie du Chien, Crawford County,
Wisconsin.
- 1979- Washed, catalogued, and analyzed historic and prehistoric
1980 artifacts from Liberty Hall (c. 1796), Frankfort,
Franklin County, Kentucky.
- 1980- Washed, catalogued, and analyzed prehistoric and historic
1981 artifacts from several Wisconsin Department of Natural
Resources surveys.

Cultural Resource Management Experience:

- 1975- Archaeologist/Environmental Reviewer, Anthropology Office,
1976 State Historical Society of Wisconsin (10 months). Reviewed
environmental impact statements for the State Archaeologist
and State Historic Preservation Officer.
- 1976- Archaeologist/Environmental Reviewer, Anthropology Office,
1977 State Historical Society of Wisconsin (11 months).
Reviewed environmental impact statements and maintained
the Wisconsin Archaeological Codification Files.
- 1977- Research Analyst I, State Historic Preservation Office,
1978 Madison, Wisconsin (7 months). Employed under a
Coastal Zone Management grant to compile, systematize,
and update an inventory of known Wisconsin archaeological
sites in Lake Michigan counties.

- 1978 Curator II, Anthropology Office, State Historical Society of Wisconsin (4 weeks). Employed under a Wisconsin Department of Transportation, Division of Highways grant to conduct a records search of archaeological sites reported during the Wisconsin Highway Survey Program.
- 1980- Natural Resource Specialist 2 - Archaeologist. Wisconsin
1981 Department of Natural Resources, Bureau of Parks and Recreation, Madison. Employed under a federal survey and planning grant administered by the State Historical Society of Wisconsin to conduct archaeological field surveys on Department lands and implement a Departmental historic preservation and cultural resource management program.

Teaching Experience:

- 1977 Student Residency, James Madison Memorial High School, Madison, Wisconsin. Natural History course, Sophomore curriculum, spring semester.
- 1979 Teaching Assistantship, ANT 121 Human Ancestry, University of Kentucky, spring semester.

Carol I. Mason
Associate Professor of Anthropology
The University of Wisconsin Center System
Fox Valley Campus
Menasha, Wisconsin 54952
Office Phone: (414) 735-5809 or 735-5577

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Education: B.A. cum laude (anthropology). The Florida State University, 1956
M.A. (anthropology), The University of Michigan, 1957
Ph.D. (anthropology), The University of Michigan, 1963

Professional Experience:

Archaeological field research, northern Florida, Florida State University, 1955, 1956

National Science Foundation Fellow in Anthropology, The University of Michigan 1956, 1957, 1958

National Park Service, Ocmulgee National Monument, Macon, Georgia. Research in museum and archaeological collections, Archaeology Laboratory, 1956, 1957, 1958

Neville Public Museum, Green Bay, Wisconsin, co-director of archaeological field research in northeastern Wisconsin, 1959, 1960

North American Foundation, co-director of field program in archaeology (with Lawrence University), 1961

St. Norbert College, De Pere, Wisconsin, Instructor in anthropology, 1959-1960, 1964-1965

The University of Wisconsin Center System, Green Bay Campus, Instructor in anthropology, 1960-1961

The University of Wisconsin Center System, Fox Valley Campus, Instructor in anthropology, 1961-1963, 1964-1968

The University of Wisconsin - Green Bay, Assistant Professor of anthropology, 1968-1972

The University of Wisconsin Center System, Fox Valley Campus, Assistant Professor of anthropology, 1972-1976

Wisconsin Social Studies Curriculum Study Committee, Subcommittee on anthropology, 1972-1979

The University of Wisconsin Center System, Fox Valley Campus,
Associate Professor of anthropology, 1977-present

Archaeological field work with Lawrence University, Appleton,
Wisconsin, summers of 1970, 1971, 1972, 1973, 1974, 1978

Contract archaeology for both public and private institutions,
to date

Professional societies:

American Anthropological Association
Associate in Current Anthropology
Wisconsin Historical Society
Wisconsin Archaeological Survey
vice-president 1972-1973
president 1975-1977
Florida Anthropological Society
Phi Kappa Phi
Phi Beta Kappa

Grants received:

National Science Foundation Institutional Grant, The University of
Wisconsin - Green Bay for archaeological field work, summer 1970

Chancellor's Research Grant for archaeological field work, summer
1969, The University of Wisconsin - Green Bay

University of Wisconsin Curriculum Improvement Grant, Culture and
Technology Program, the University of Wisconsin Center System - Fox
Valley Campus, summer 1976

NEH Grant through the Wisconsin Humanities Council to the Outagamie
County Historical Society for work at the Augustin Grignon House,
Kaukauna, Wisconsin, 1980

Publications:

- The Archaeology of Ocmulgee Old Fields, Macon, Georgia. Ph.D.
dissertation. Ann Arbor: University Microfilms
- 1959 "Dating English Pipestems" The Florida Anthropologist, Vol. 12,
no. 3, pp. 71-72
- 1960 (with R.J. Mason) "An Eden-Scottsbluff Burial in Northeastern
Wisconsin." American Antiquity, Vol. 26, pp. 43-57
- 1961 (with R.J. Mason) "The Age of the Old Copper Culture." Wisconsin
Archaeologist Vol. 42, pp. 143-155

- 1963 "Eighteenth Century Culture Change Among the Lower Creeks." *Florida Anthropologist*, Vol. 16, pp. 65-80
- 1963 "Comments on Mouse Creek - Yuchi Identification." *American Antiquity*, Vol. 28, pp. 550-551
- 1963 "A Reconsideration of Westo-Yuchi Identification." *American Anthropologist*, Vol 65, pp. 1342-1346
- 1964 "Natchez Class Structure." *Ethnohistory*, Vol. 11, pp 120-133
- 1964 "An Early Woodland Vessel from Wisconsin." *Wisconsin Archaeologist*, Vol. 45, pp. 158-160
- 1967 (with R.J. Mason) "A Catalogue of Old Copper Artifacts in the Neville Public Museum." *Wisconsin Archaeologist*, Vol. 48, pp. 81-128
- 1970 The Oneota Component at the Ports des Morts Site, Door County, Wisconsin." *Wisconsin Archaeologist*, Vol. 51, pp. 163-190
- 1971 "Gunflints and Chronology at Ocmulgee National Monument." *Historical Archaeology*, Vol. V, pp. 106-109
- 1973 "Historic Archaeology at Ocmulgee National Monument." National Park Service, Southeastern Center, Tallahassee, Florida
- 1974 (with Patricia Warrick and Martin Greenberg) Anthropology Through Science Fiction. New York, St. Marin's Press
- 1974 "As Others See Us, the Image of Anthropology in Science Fiction." American Anthropological Association Symposium on Anthropology and Science Fiction, Mexico City
- 1975 "Historic Archaeology in Wisconsin." *The Handbook of Wisconsin Archaeology*, ed. by Alice Kehoe and James Stoltman (in press)
- 1976 "Historic Identification and Lake Winnebago Focus Oneota" in *Cultural Change and Continuity, Papers in Honor of James B. Griffin*, ed. by Charles Cleland. New York, Academic Press
- 1976 "Jesuit Rings from Rock Island, Wisconsin." *Historical Archaeology* Vol. 10, pp. 113-120
- 1979 (with Alice Kehoe, John Forde, and Art Rumpf) "Wisconsin Social Studies Curriculum Study Committee: Descriptors for Anthropology, a Guide to Asking Questions about Learning Anthropology Facts and Concepts in Wisconsin Schools, K-12." Madison, Department of Public Instruction.

- 1979 "In Search of the Island of the Potawatomis." The Chronicle,
Vol. 15, no. 2, Michigan Historical Society, pp. 5-11
- 1980 "Historic Buildings at the Grignon Home, Kaukauna, Wisconsin."
Manuscript prepared for the Outagamie County Historical Society,
Appleton, Wisconsin.
- 1981 "Excavations on the Little Eau Pleine: Site 6," The Wisconsin
Archaeologist, vol. 62, no. 1, pp. 84-111

VITAE

ROBERT F. BOSZHARDT

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AREA OF INTEREST: Prehistoric Adaptations and Cultural Change in the Upper Mississippi River Valley and Western Upper Great Lakes.

ACADEMIC HISTORY: University of Wisconsin-Waukesha Center, 1972-1974.
University of Wisconsin-Milwaukee, Bachelor of Arts,
Anthropology, 1977
University of Wisconsin-Madison, Master of Arts,
Anthropology, 1982

MEMBERSHIP IN PROFESSIONAL SOCIETIES AND ORGANIZATIONS

The Iowa Archaeological Society
The Galena Historical Society
Wisconsin Archaeological Society (Advisory Council)
Iowa Historical Society
La Crosse Area Archaeological Society

PAPERS PRESENTED

- 1981 The Prairie Phase, an "Early Woodland" Manifestation in the Upper Mississippi River Valley. Midwest Archaeological Conference, Madison, Wisconsin. Junior participant with Dr. James Stoltman and James L. Theler. Paper delivered by Dr. James Stoltman.
- 1981 Preliminary Report on an Archaeological Survey of Pool 12, Upper Mississippi River. Midwest Archaeological Conference, Madison, Wisconsin.
- 1981 Report and Discussion of Archaeological/Geomorphological Interpretations of Pool 12 in the Upper Mississippi River Valley. Wisconsin Archaeological Society, November meeting, Waukesha, Wisconsin.
- 1982 The La Crosse Area Archaeological Society's Excavations at the Dahl Site. La Crosse Area Archaeological Society, September meeting, La Crosse, Wisconsin.

PUBLICATIONS

- 1977 Radiocarbon Dates for Wisconsin, 1976, A Second Compilation. The Wisconsin Archaeologist, 58(2):84-150.
- 1982 Wisconsin Radiocarbon Update: 1981, The Wisconsin Archaeologist, Vol. 63 (2).

TECHNICAL REPORTS

- 1981 Archaeological Investigations on Private Lands in the Lowland Floodplain near Prairie du Chien, Wisconsin. State Historical Society of Wisconsin. Section of Comprehensive Report on Archaeological Investigations of the Prairie du Chien locality, Crawford County, Wisconsin, prepared by Dr. James B. Stoltman, James L. Theler, Constance Arzigian and Jeff Behm.

- 1981 Preliminary Investigations: Archaeological and Sediment Geomorphology, Navigation Pool 12, Upper Mississippi River. Great Lakes Archaeological Research Center, Reports of Investigations No. 115 (3 volumes). Senior author with Dr. David Overstreet.
- 1982 Archaeological Investigations in the Lowland Floodplain of Navigation Pool 10 near Prairie du Chien, Crawford County, Wisconsin. Master's Thesis, University of Wisconsin-Madison, Department of Anthropology.
- 1982 Archaeological Investigations at The Dahl Site (47Lc148), Mississippi Valley Archaeology Center, Inc. Reports of Investigations No. 1. Senior author with Dr. James P. Gallagher.

ARCHAEOLOGICAL FIELD/LABORATORY EXPERIENCE

- 1973 Crew member, Archaeological Field School, Hixton Quarry Site, University of Wisconsin-Waukesha. Dr. David F. Overstreet, Director.
- 1974 Crew member, Byron Power Plant Project, First and Second Phase Testing, University of Wisconsin-Milwaukee. Robert Birmingham, Director.
- 1975 Crew member, Apostle Island Survey, Beloit College. Dr. David F. Overstreet, Director.
- 1975 Crew member, Marina Site Excavation, Madeline Island, Wisconsin, Beloit College. Robert Birmingham, Director.
- 1975-1976
Lithic Analysis, Apostle Island Survey, Beloit College. Dr. David F. Overstreet, Director.
- 1976 Crew member, Jones Bluff Survey (Alabama River), Office of Archaeological Research, University of Alabama. C. Oakly and M. Watson, Directors.
- 1976 Crew member, Subassistant, Phipps Bend Excavations (Tennessee), Office of Archaeological Research, University of Alabama. Robert Lafferty, Director.
- 1976 Crew member, Rock River Survey (Rock Island County, Illinois), University of Wisconsin-Milwaukee. Robert Birmingham, Director.
- 1977 Crew member, Historic Site Survey, Fox River Watershed, Waukesha County, Wisconsin. Dr. David F. Overstreet, Director.
- 1977-1979
Research Assistant, the Great Lakes Archaeological Research Center, Waukesha, Wisconsin. Project participation included:
- Archaeological Inventory and Evaluation of Weston, Unit 3 Power Plant, Marathon County, Wisconsin.
 - Archaeological Inventory of the Sanitary Sewer Collection System and Waste Disposal Treatment Facility: Town of Norway Sanitary District No. 1, Racine County, Wisconsin.
 - Archaeological Inventory and Evaluation of the Proposed Sewage Treatment Facilities at Mukwanago, Waukesha County, Wisconsin.
 - An Archaeological Inventory and Evaluation: The Proposed Waukesha County Technical Institute Expansion Project.
 - An Intensive Archaeological Survey, Milan-Big Island Phase II Study, Rock River, Illinois.
 - Archaeological Inventory and Evaluation: Brillion, Wisconsin Wastewater Treatment Facilities.

- Archaeological Inventory and Evaluation of Butte des Morts Utility District, Menasha (West).
- Cultural Resource Inventory of the Chippewa River in Sawyer County, Wisconsin.
- Cultural Resources Reconnaissance, Loves Park, Illinois, Interim 2, Flood Feasibility Study.
- Archaeological Inventory of the Proposed Areas of Modification, Black River Falls Mine, Jackson County, Wisconsin.
- Archaeological Inventory of the Sand Hill Estates and Hillside Homes Community, Oneida, Outagamie County, Wisconsin.
- Archaeological Inventory of the Proposed Stabilization Ponds, Lift Station and Interceptor Route, Mellen, Wisconsin.
- Archaeological Inventory of the Cherryland Airport Extension, Door County, Wisconsin.
- Archaeological Inventory of the Proposed Realignment of County D, Florence County, Wisconsin.
- Cultural Resource Evaluation of the Sturgeon River Wilderness Study Area, Ottawa National Forest.
- Archaeological Inventory of the Proposed Outagamie Airport Industrial Park Site.
- Cultural Resource Evaluation of Two Chequamegon National Forest Wilderness Study Areas: Flynn and Round Lakes.
- Archaeological Inventory and Evaluation of the Proposed Wastewater Treatment Facilities at Cambellsport, Fond du Lac County, Wisconsin.
- Archaeological Inventory and Evaluation of the Proposed Dredging Deposition Areas at Muskego, Wisconsin.
- Initial Archaeological Inventory of Chequamegon National Forest in Northwestern Wisconsin.
- Archaeological Inventory and Evaluation of the Proposed Wastewater Treatment Facilities at Columbus, Wisconsin.
- Archaeological Inventory of the Proposed Wisconsin Public Service Corporation Ash Disposal Site, Brokaw, Marathon County, Wisconsin.
- Cultural Resource Inventory and Evaluation of the Proposed Expansion of the Wastewater Treatment Facilities at Monroe, Green County, Wisconsin (Field Supervisor).
- Archaeological Inventory of the Proposed Electrical Power Service Line from Prairie du Chien to Indian Isle, Crawford County, Wisconsin, Field Supervisor.
- Archaeological Inventory and Evaluation of the Proposed Wastewater Treatment Facilities at Friesland, Columbia County, Wisconsin.
- Archaeological Inventory of the Proposed Hidden Harbor Development at Fish Creek, Door County, Wisconsin.
- Salvage Excavations at the Convent Knoll Site (47Wk327), a Red Ochre Cemetery at Elm Grove, Waukesha County, Wisconsin.
- Archaeological Excavation at the Mile Long Site (47Wl110), Lake Delevan, Walworth County, Wisconsin.
- Archaeological Inventory and Evaluation of the Proposed Wastewater Treatment Facilities at Boscobel, Grant County, Wisconsin.
- Archaeological Inventory of the Proposed Wastewater Treatment Facilities at Palmyra, Jefferson County, Wisconsin.
- Archaeological Recovery at 11Ri337, an Early Middle Woodland Shell Midden in East Moline, Illinois.

- Cultural Resources and Assessment: Butternut and Franklin Lakes, Nicolet National Forest.
- Archaeological Survey of the East Shore of Lake Winnebago: 1979.
- Archaeological Survey of the Green Bay Coastal Corridor (Field Supervisor).
- A Cultural Resource Survey of Proposed Undertakings Nicolet National Forest, Wisconsin.

1980 Research Assistant, University of Wisconsin-Madison, Laboratory of Archaeology. Project participation included:

- Archaeological Investigations in the Prairie du Chien Locality, Crawford County, Wisconsin.
- Supervisor, University of Wisconsin-Madison, Field School in Archaeology.
- Archaeological Investigations on Private Lands in the Lowland Floodplain of the Upper Mississippi River near Prairie du Chien, Wisconsin.

1981 Research Assistant, the Great Lakes Archaeological Research Center, Waukesha, Wisconsin. Project participation included:

- Archaeological Testing of an Early Logging Camp (47Fr142) Forest County, Wisconsin.
- A Cultural Resource Survey at Kinickinic State Park, Pierce County, Wisconsin.
- Archaeological Survey of Pool 12, Upper Mississippi River Valley (Field Supervisor).
- Archaeological Testing of Two Prehistoric Sites (47Fr141, 47Fr143), at Oak Lake in Northcentral Wisconsin.

1982 Field Director. Archaeological Investigations at The Dahl Site (47Lc148), La Crosse County, Wisconsin.

1982 Co-Field Director. Archaeological Survey and Excavations at the Sand Lake Site (47Lc44), La Crosse County, Wisconsin.

1982 Field Director. La Crosse County Archaeological Survey, 1982.